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RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, FINANCE,

INSURANCE, BANKING, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

SATURDAY, APRIL 7, 1860.

Second Quarto Series, Vol. XVI., No. 14.---Whole No. 1,251, Vol. XXXIII.

ESTABLISHED IN 1831.

NEW-YORK:

PUBLISHED WEEKLY, BY

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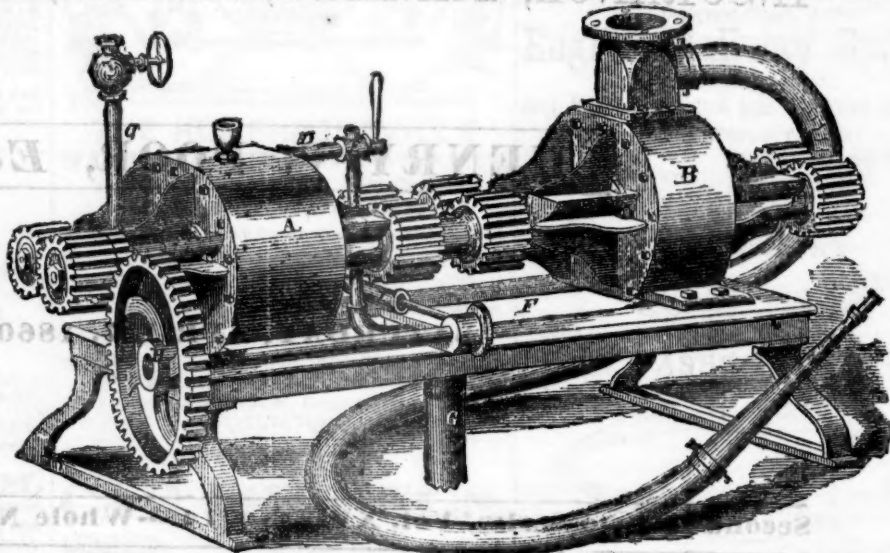
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HENRY V. POOR, *Editor.*

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PUBLISHED WEEKLY BY J. H. SCHULTZ & CO., AT NO. 9 SPRUCE ST., NEW YORK, AT FIVE DOLLARS PER ANNUM.

SECOND QUARTO SERIES, VOL. XVI., No. 14.]

SATURDAY, APRIL 7, 1860.

[WHOLE No. 1,251, VOL. XXXIII.]

Mr. FREDERIC ALGAR, No. 11 Clements Lane, Lombard Street, London, is the authorized European Agent for the Journal.

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American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & CO. NO. 9 SPRUCE ST.

New York, Saturday, April 7, 1860.

(For the American Railroad Journal.)

Victoria Bridge.

(Continued from p. 203.)

Mr. Brunel in further discussing the subject of *Wooden Ice Breakers*, as used in America, to which I have before referred, says: "But in taking these as precedents, the question arises what has been the degree of success?" And then he asks, "Have we the means of judging, whether, if 50 of these were exposed to the action of the St. Lawrence, one or two would not be carried away every ten years; and what would be the result of such an average in the present case, where there are 24 piers?" And he solves the problem by the answer "that the probability would be that one or two bridge piers at the least would be carried away, or interrupted, on the average two or three times every 20 years." That is to say—if one pier out of 50 is carried away in five years, three would be carried away, out of 24, in ten years! This is new rule of proportion in "probabilities" which I confess I do not understand; but it seems to me quite evident that it was the rule applied generally in determining the dimensions and character of the various parts of the Victoria Bridge. On the other hand, he says that "the same average would give a probability of a hundred years duration in a single ice breaker." Now it seems to me that if out of 25 piers one is carried away every ten years, the "probability" in the case of

a single pier is, that it would be carried away once in 250 years. This calculation of "probabilities," however, is out of place, even if correct, for the grand object is not to run *any risk whatever*. But in arriving at safety, it by no means follows that we should incur an excessive cost, and the question is not merely how to avoid risk, but how to avoid it at the lowest cost. It requires no skill to avoid risk *regardless* of cost. And if the only condition to be fulfilled is this, there would be no necessity for engineers. Anybody can accomplish it.

A great proportion of American bridge piers are constructed on foundations of *crib work*, filled with stone, where any serious depth of water is encountered; and such expedients have been uniformly successful. Mr. Liddell mentions an instance, with which I am familiar, of the bridge across the Richelieu River at Chambly, about 15 miles from Montreal. The river is about 1,000 feet wide, the current very strong, and the ice heavy. The piers of this bridge are of ashler face, with rubble filling, and are laid on a foundation of wooden cribs; yet they have withstood the action of ice for 20 years. The bridge on the Grand Trunk Railway, across the same river at St. Hilaire, built in 1847, by Mr. A. C. Morton, is about the same length, with similar piers, built on crib work of timber. These piers have not failed, although subjected to severe floods and heavy ice, and within the past three years the Grand Trunk Company have erected an *iron tube* on them. As Mr. Liddell says: "There is no appreciable risk run in adopting what has been uniformly successful." I believe, however, neither Mr. Stephenson nor Mr. Ross in their reports condemned Mr. Keefer's plan of cribs on account of any "probability" of their failing. The former, as before stated, merely argued that they would cost more than the ashler *cutwaters*, while the latter says: "You will also perceive that these *quarter acre islands* would occupy 25 per cent. of the water breadth of the river, one of the most prominent reasons for their abandonment *when first considered*." Now Mr. Keefer's plan contemplated 22 openings of 240 feet clear between the cribs, and one of 340, making a total clear width of water way of 5,620 feet at summer level. At the same level, the Vic-

toria bridge has 24 openings of about 238 feet each, and one of about 324 feet, making a total of 6,036 feet. Then 416 feet, or less than seven per cent., difference in water way, which could have been more than supplied by the substitution of two more spans, at a far less cost per foot than Mr. Stephenson's embanked approaches was; therefore it seems the prominent reason why these cribs were abandoned.

Mr. Liddell says in relation to this: "Now considering that since the contract was made, a reduction in water way has been made to the extent of 1,332 feet, or three times the difference between the water way proposed by Mr. Keefer and that now adopted; this allusion to the *proportion* occupied by these *quarter acre islands*, does not bear examination."

Besides this, it seems not to have occurred to Mr. Ross that in the adoption of tubes, or other plans of superstructure, having no arches running down on the sides of the piers, narrower cribs might be used; and that a reduction of their width from 60 to 40 feet each, which would be perfectly admissible, would have more than supplied the 7 per cent. deficiency of water way.

The discussion upon the philosophy of "probabilities," between Mr. Liddell and Mr. Brunel, is interesting, and I may be pardoned for giving other portions of it.

Mr. Brunel says: "Engineering difficulties are very generally regarded as mere questions of expense; and assuming that a difficulty is to be overcome, and that judicious means are devised for the purpose, the execution or application of these means, may, generally speaking, be treated as a question of cost, *merely*; and if the required cost is incurred, the difficulty is assumed to be overcome, but this is not strictly true in practice. Very few of the great difficulties in engineering, resulting from natural causes, can be overcome, or the result rendered *positively certain*. * * * Success is at best but a question of *degree*, and what is called certainty, a mere question of probabilities. * * * While this is a strong argument against incurring excessive cost, it is also necessary to bear it in mind when considering plans which have been found hitherto to succeed."

It is necessary, he says, to ascertain "the de-

gress of that success," and the value "of the risk running" in these examples. Mr. Liddell in reply to this somewhat abstruse philosophy, remarks:

"With all due deference, I venture to examine the reasoning in these paragraphs as Mr. Brunel applies the principles they contain to determine the plan and dimensions of the piers of the Victoria bridge. * * So that Mr. Brunel deems it a mere calculation of 'probabilities' as to when the Eddystone Bell Rock and Skeddyvore Light houses are to be carried away—when the Thames Tunnel is to burst up—when the railway over Chat Moss is to sink—when the Menai Suspension bridge is to be destroyed—when the Britannia bridge—the Suspension bridge at Pesth—the Aqueduct at Roquefavour, and other triumphs of engineering skill are to be swept away. This is a view of these works which few will share. Mr. Brunel considers risk a strong argument against incurring excessive cost in the execution of a work. The assumption is that the difficulty is to be judiciously overcome, which precludes the idea of excessive cost, so that the argument is *ad captandem*."

Mr. Brunel says—"It is necessary to consider the amount of risk it is wise or profitable to run in the particular case under consideration." To which Mr. Liddell replies that "it would be unwise and unprofitable to run any risk whatever;" and he considers Mr. Brunel's views "as at once destitute of practical meaning and most derogatory to the science of engineering. The question really turns on what are the most judicious means of providing against risks."

But to leave the metaphysics of engineering, and return to more practical matters, and to the question whether such an expenditure as was incurred in these foundations was a "judicious means of providing against risks."

Other methods besides wooden cribs suggest themselves, and particularly that of concrete laid in caissons, a plan extensively adopted for foundations of the most important structures under similar circumstances. This method was suggested by Mr. Liddell as quite applicable to the Victoria bridge piers, but was strenuously opposed by Messrs. Stephenson and Ross, as well as Mr. Brunel. Mr. Liddell says: "The chief point for consideration seems, in fact, to be how to construct this part (the under water portion) in the shortest possible time. For the best manner of accomplishing this object, I advise that the piers up to the ordinary level of water should be formed of rough stone concrete, with cement laid in an iron casing; the upper portion of the piers to be built upon this in the ordinary way. * * My estimate for the 24 piers and two abutments, built in the manner recommended, with ice breakers for each, and for the embankments at each end of the bridge, amounts to £220,000. I have in this estimate adopted prices of work far above the English."

The difference in cost between the two plans is to be obtained by a comparison up to summer level.

As before stated, Mr. Ross's estimate as the cost of the foundations before laying the first stone, was 55 per cent. of the total cost of the piers, i. e., £140,000—leaving the sum of £360,000 as the cost of the masonry, an average of £6 per cubic yard. There can be no great difference in the cost of laying masonry above or below summer level, the foundations first being prepared.

If, therefore, we assume one-third the masonry to be below water, we have £120,000 to be added to the cost of foundations, £140,000, making £260,000 as the cost of the piers below summer level. But if we take the price of two shillings and six pence per foot, which Mr. Ross says is "left for the masonry," and apply this to 40,000 yards, we have the sum of £185,000 only to deduct from the total of £800,000, leaving the cost below summer level, £615,000.

Mr. Brunel in discussing the question of these foundations says in regard to the plan adopted by Mr. Stephenson: "I am convinced that it would, practically, be the least costly in the first construction. * * The form and size of a simple ashler pier can be determined with some degree of certainty, so as to insure what may be termed safety. But the form, size, etc., of any combination of piles and stones, or iron plates and concrete, are none of them susceptible of being determined by any calculation from precedent. * * Any opinion, therefore, would be little better [than guess-work]." I feel convinced, he says, "that the result would be a much more costly work than a simple ashler pier."

Mr. Brunel, however, gives no figures or calculations, and therefore all the above is merely his dictum, having weight just so far as it will stand the ordeal of facts and figures.

To these assertions, Mr. Liddell opposes the following: "Suppose a caisson of wrought iron, fitted in situ, and then filled with beton, in the usual manner of doing such work. I will take the outer casing at 3,000 superficial feet, to make full allowances for the construction I propose, and the cubic contents at 12,000 cubic yards. The iron made on the average one inch thick, at £36 per ton, would cost £1,944, say £2,000. The beton made of the best cement and limestone of the district, would cost about £2 per yard in situ, or £2,400. The total cost would not therefore exceed £4,400."

This calculation being made for the deepest piers, and the average depth being only about two-thirds of the pier estimated for, he says: "The average cost of such foundations, for the piers, at the same rates, would therefore be £3,000; and this multiplied by the number of piers (24) is but £72,000. If it is said it is not strong enough, double the thickness of iron; sheath the cutwater in four inch forged bars; tie it all down with Lowmoor iron rods, three inches thick, let four feet into the rock at every 10 feet all around, and when you have multiplied all appliances to a needless superfluity of strength, you shall still not have reached one fifth the contract price of the foundations of these piers. I give this illustration to show how little an opinion put forward in the manner of Mr. Brunel's ought to be regarded."

Mr. Liddell proceeds to speak of the reliance to be placed on the use of concrete as demonstrated by the practice of engineers and architects in England, France and Germany, and broadly asserts that "a man who can deny the efficiency of concrete, must either be ignorant on the subject, or must wilfully shut his eyes to the facts. * * * There is nothing more certain than that such a construction as I have suggested would stand as well as the foundations recommended by others; nothing more certain than that they would stand better. Their specific gravity would be greater;

their strength would be greater; their form to break the ice could be made the best possible, and the material exposed is harder and less destructible by abrasion than stone. Wrought iron in such position, of the least thickness proposed, would last for a century; and then, nature would have come in to assist the engineer, by rendering the concrete as hard and unchangeable as the rock on which it was founded."

Mr. Brunel mentions a case where concrete by being badly proportioned and mixed had failed, as an argument against its use. But as this simply proves that poor concrete should not be used, and as no engineer would think of recommending any but the best for such purposes, the case has no bearing. It is sufficient to say that its use is co-extensive with the construction of submarine works for a century past, and its service proves how groundless are Mr. Brunel's objections on this score. Good concrete like a solid ledge can only be broken by blasting. That a skilful use of concrete in iron caissons, in this instance, would have reduced the cost of these foundations £100,000, admits of no more doubt than the fact of its successful endurance of the most severe tests in numberless instances.

Upon the question of a "judicious means" of carrying the required load across the openings between the piers of the Victoria Bridge we might apply some of Mr. Brunel's philosophy, and if we bear in mind, that "success is but a question of degree;" and that "while this is a strong argument against incurring excessive cost, we must be adopting any particular plan, ascertain the degree of success which has attended its use," we might be excused for not adopting the tube, a plan of which there are but few examples, and those so recent that it would be premature to adopt conclusions, the object of which is to arrive at the nice point in the scale of probabilities to which this reasoning would bring us. For of all the plans of superstructure which could be suggested for performing the required service, less could be known by precedent of the tube, than any other. That the tubular system may fulfill certain conditions which no other plan can meet, and that in the case of the Britannia bridge it may have been precisely what the circumstances called for, is no sort of argument in favor of its applicability to positions where no such conditions exist. The structure which may be perfectly appropriate in one case, may be entirely inappropriate in another; and to say, as Mr. Stephenson says in his report, that the tube originated in meeting conditions that no other plan could meet, has nothing to do with the question as to the most "judicious" plan for spanning openings of 242 feet, each, in the Victoria Bridge. This is not a very long span. It was no new engineering task to be performed. It was not one involving any "degree of risk," for it had been accomplished repeatedly, and the "degree of success" was not a fraction, but a unit. It had not only been accomplished with open iron trusses but in wood. Its perfectly feasible and perfectly safe accomplishment by several well known plans had been demonstrated practically, in many instances, and hence there was no risk whatever in applying the same plans to the openings of this bridge. It was simply a question of first cost and maintenance; for if the sufficiency in strength be admitted, the questions of cost and maintenance

are the only elements involved in determining what would be a "judicious expenditure."

It was not by any means necessary that the superstructure should be measured by the magnitude of the piers that sustained it, or the abutments which connected it with the approaches.

The ice phenomena were not elements in the calculation at all, but the span of 242 feet of the Victoria bridge had no greater duty to perform than if it had been constructed over the most limpid brook in a climate of perpetual summer. The fact of its spanning a portion of a great river in which the most terrific phenomena occur, involved no greater necessity of extraordinary and special features than if it spanned the shallowest and most quiet puddle, or an equal space of dry land at an elevation of a foot above the surface. Yet the superstructure of this bridge involving the fulfillment of no unusual conditions cost more per lineal foot than any other beam of the same span designed for similar purposes, in the world.

(To be continued.)

City Railroads in St. Louis.

St. Louis has entered upon the experiment of City Passenger Railroads, and has already four separate lines in operation. We glean the following financial statements of the several companies from late reports to the Common Council.

The "St. Louis Railroad Company," opened the completed portion of their road in September, 1859. The cost to the 1st of March, 1860, was as follows:

Construction of roadway	\$212,837
Cost of equipment.....	73,769
" real estate.....	12,000

Total cost

The total earnings of the road from the 1st September, 1859, to 1st March, 1860, six months, were.....	\$53,619
And the expenditures.....	48,120

Applicable to taxes, dividends, interest, etc. \$5,499

The "Citizens' Railway Company" state the cost incurred on account of their road to the 31st December, 1859, as follows:

Real estate	\$13,311
Rolling stock	19,518
Running stock.....	19,212
Stable construction.....	3,084
Road construction.....	62,312

Total cost

This road was opened for traffic on the 15th August, 1859. From this date to 31st Dec., the total receipts amounted to.....	\$33,043
And the expenditures to	26,873

Leaving for taxes, dividends, etc

The receipts for January were \$4,089, and for February, \$4,091—making a total of \$41,223. The running expenses for January were \$5,698, and for February \$4,728—making a total of \$7,319. Earnings less expenses for first six months of running, \$3,903.

The "People's Railway Company" commenced running in September, 1859, and to the 25th February, 1860, earned in gross \$23,071, and disbursed on account of operations \$21,864—leaving for dividends, etc., \$1,207 as the result of nearly six months operations wherewith to pay interest, taxes and dividends. The cost of the road of this company at the date above referred to was as follows:

Cost of roadway.....	\$45,214
" equipment, harness, etc	1,830
" cars.....	16,011
" horses	11,139
" buildings, shops, stables, etc.....	5,660
" omnibus and wagons, etc	2,680
Expenses of agencies, etc	2,251

Total

The "Missouri Railroad Company" states its condition on the 1st January as follows:

Receipts.	Expenditures.
Stock paid in.....\$66,770	Construction & equipment...\$76,674
Earnings.....27,639	Operat'g exp...21,518
Debts due.....3,783	

Total

The above shows a surplus of earnings over operating expenses for the period of six months from the 2nd July, 1859, on which day the cars commenced running, of \$6,121—a sum applicable to interest, dividends, depreciation, etc.

These exhibits are certainly not favorable. The income is inadequate. Probably, however, the next year may add up stronger figures, and the results prove remunerative to the stockholders. At any rate these enterprises must pay indirectly in the increased value of distant properties and the greater facilities they will afford to city locomotion.

New Orleans, Jackson and Great Northern Railroad.

We learn that a contract for the completion of that portion of this road lying between Aberdeen and the Mobile and Ohio Railroad has been closed with Messrs. Barker, McAllister & Brother, to be completed within 18 months. That portion of the road, also, extending 26 miles north from Cocke, Bradford & Co.'s contract has been let to Wesson, Hazlehurst & Co. The 26 miles taken by Messrs. Cocke, Bradford & Co. are nearly finished, and will be ready for the iron by the 1st of April. Other portions of the road between this point and Canton are being contracted for, and the prospects are, that the entire road will soon be in course of construction.

Northern Central Railroad.

The Annual Report of this company for 1859, embraces the statements of the President, General Superintendent, Master of Machinery and Supervisor. Taken together these several reports set forth a most extraordinary condition of matters relating to the company's affairs.

The President is brief in his statements, but to the point. He says that "when the present board assumed the direction of affairs they found a large portion of the road between Baltimore and Bridgeport in a dilapidated and unsafe condition, and the financial affairs of the company equally deplorable." The engagements of the company, however, were met by an unexpected increase (\$114,155) in the revenue which enabled the company to expend beyond the ordinary disbursements, considerable amounts in renewals and in the purchase of additional rolling stock. Much, still remained to be effected to place the road in a safe condition for travel.

To the General Superintendent the task of a detailed exposition is left. After a cursory review of the past, this officer boldly states what was the condition of the road on his accession to office. "The condition of the Northern Central road," he says, "then appears to have been this: that the portion below Bridgeport had been worn out, and

that between Bridgeport and Sunbury had never been finished. Moreover there was a great want of rolling stock, there being neither a sufficient number of passenger cars, freight cars nor locomotives, and many of those that were upon the road were greatly out of repair." In another part of his report he states that the wonder is not "that the trains sometimes got off the track, but that they ever made a trip without doing so."

These denouncements do not belong to that portion of the road between Bridgeport and Sunbury which is new, and as the Superintendent declares well constructed, but as yet deficient in many respects.

During the past year, however, every effort at improvement has been made, large sums have been expended in making the road safe, and a comparative perfection has been attained.

Notwithstanding the condition of the road, however, no serious accident occurred to any of the 354,919 passengers who passed over it. This result is due to the strict supervision of the present officers and the good conduct of their subordinates. Very few accidents of any kind occurred above Bridgeport. Those occurring below that station "were owing," says the superintendent, "principally to the bad condition of the road, causing the engines and cars to leave the track or in some manner to give way."

The business of the road as reported for the year has been unexpectedly large. The amount of freight carried was 959,768,685 pounds, being an increase of 197,001,032 pounds over that of the previous year. The total carried on all the roads operated by the company (including the Wrightsville, York and Gettysburg, and the Sunbury and Erie roads) was 1,114,314,900 pounds. In the above amount of freight is included 222,531 tons of coal, being an increase of 57,378 tons over the quantity transported in 1858. Of this amount 86,637 tons were manifested at Sunbury, 80,810 tons at Trevorton, 41,935 tons at Millersburg, 7,977 tons at Dauphin and 5,172 tons at Wrightsville. About 100,000 tons were carried through to the city of Baltimore.

The number of passengers carried on the main line was 254,160, on the Wrightsville line 26,647, and on the Sunbury line 74,112—total 354,919, being an increase of 71,273 over the year previous.

The total revenue was \$929,528, and the total expenses \$588,941—net receipts, \$340,993. From the expenses, however, ought to be deducted \$34,253 expended for construction and \$104,557 for extraordinary repairs, which would leave a net revenue of \$479,396.

During the year the Canton Division has been finished, and also the telegraph from Sunbury to Baltimore. The cost of the latter was \$10,812.

The rolling stock has been increased during the year by the purchase of four locomotives, sixty-five house freight cars, ninety-five gondola cars and two passenger cars; and five old locomotives and 22 lime cars have been sold. The rolling stock now on hand consists of 41 locomotives and cars as follows—eight-wheel: 265 house freight, 146 gondola, 8 stock, 8 baggage and 31 passenger; six-wheel: 4 house freight, 61 lumber, 13 wood, 9 stone; four-wheel: 57 house freight, 156 lumber, 140 lime, 18 wood, 2 powder, 785 coal, 10 dumping and 32 ore.

The Treasurer's accounts giving a statement of the company's operations for the year and its financial condition on the 1st January, 1860, are as follows:

REVENUE ACCOUNT FOR 1859.

Receipts:—	
Passenger earnings	\$252,096
Freight	646,768
Mail	29,868
Miscellaneous receipts	1,801

Less earnings of W. Y. & G. R. R. from

1st October to 31st December

Total earnings N. C. R. R. Co.

Disbursements:—

Transportation expenses

Repairs of machinery

General expenses

Less expenses charged W. Y. & G. R. R.

Co. 1st Oct. to 31st Dec., 1859, as per

contract

Working expenses, 68.06 per cent.

Net revenue

Total

PROFIT AND LOSS ACCOUNT FOR 1859.

Interest on loans

Dividend of \$1.25 per share on 6,341 sh.

W. Y. & G. stock

Sinking fund appropriation for year ending

30 Sept., 1859

Interest on S. F. investment

Int. on uninvested appropriation

Int. 6 per cent. on \$62,000 W. Y.

& G. bonds

Int. 6 per cent. on \$31,513 W. Y.

& G. debt

Accidents 6th March and 4th July, 1854,

Old claim

Interest account

Exchange

Balance unappropriated

Total

Balance from revenue account

Interest on \$62,000 W. Y. & G. R. R. Co.'s

bonds to 30th Sept. 1859

Int. on \$31,513 W. Y. & G. R. R. Co.'s

debt, to 30th Sept., 1859

Due on 3,173 shares W. Y. & G. R. R.

Co.'s stock, to 30th Sept., 1859

Interest accrued on Sinking Fund for

Loan No. 7, \$2,500,000

Total

Balances at credit 31st December 1859:

Balance as above

Balance 31st December, 1858

Total now at credit

The earnings of the Northern Central Railroad

and the roads operated by the company in 1858

and 1859 have been comparatively as follows:—

1858. 1859.

Northern Central

W. York and Gettysburg

Westminster Branch

Sunbury and Erie

Miscellaneous

Total

Increase in 1859 over 1858

BALANCE SHEET, JAN. 1st, 1860.

Railroad, Baltimore to Bridgeport	\$3,779,977
Bridgeport to Sunbury	2,981,841
Canton Division	817,353

Real estate

Rolling stock

Cash and cash items

Bonds of W. Y. & G. R. R. Co.

Debt of " " " "

Stock of " " " "

3,173 shares

Stock of N. Cent. R. R. Co., 848

shares

Bonds of Susq. and Tide Water

Canal Co.

Sinking Fund for Loan No. 1.

In trust for S. F. for Loans No.

1 and 7

Do. for Loan No. 7

Materials, machinery and tools on hand

Total

Stock capital, 45,141 shares

" " " " scrip

Owned by City of Baltimore and on

completion of road to revert to com-

pany

Owned by company (in-

vested)

Do. (Sinking Fund)

Owned by individuals

Loans secured by mortgage—

No. 1, Coupon bonds of Baltimore and

Susq. R. R. Co.

No. 2, Loan from Maryland

No. 3, 1st mort. coupon bonds

of York and Cumberland

R. R. Co.

No. 4, 2d mort. coupon bonds

of York & Cumb. R. R. Co.

No. 5, Bonds of Y. & C. issued

for Susq. R. R. Co.

No. 6, Contract bonds of N. C.

R. R. Co.

No. 7, Bonds of N. C. R. R.

Co. (new)

Debt to City of Baltimore which on

completion of road reverts to the com-

pany

Outstanding liabilities—

Bills payable

Coupon account

Loan account

Bills for November and Dec.

Dividend account (W. Y. & G.

R. R. Co.)

State of Maryland

Individuals and corporations

Switch grants (per regulations)

Bonds for right of way, due 1st July,

1863, and 1st Jan., 1868

Surplus profits

Total

BOARD OF DIRECTORS AND OFFICERS, 1860.

President—JOHN S. GITTINGS.

Directors on the part of the City—Chas. George

Ridgely and A. Fuller Crane.

Directors on the part of the Stockholders—James

Frazier, Peter Mowell, William T. Walters, Adam

Denmead, John Merryman, Aaron Hoffman, Simon

Cameron, Amos E. Kapp, William Colder, J., Alex-

ander-Small, Jacob S. Haldeman, William Cam-

eron.

Secretary—ROBERT S. HOLLINS.

Treasurer—JOHN S. LEIB.

Chief Engineer and Gen. Supt.—A. B. WARFORD.

Steam engineering in 1859.

(Continued from p. 236.)

In the preceding paper, the attention of the engineering reader was directed to the prevalent defects in the conveyance of steam through the pipes and cylinders; and it must be confessed that among practical men the most lamentable ignorance exists, and for the simple reason, that the evils referred to are not immediately evident. The cylinder and the steam therein make up their own accounts, and very few take the trouble to investigate the balance.

A fall of three or four inches in the vacuum is sufficient to alarm the most indifferent engineer, but a loss of 30 per cent. by condensation is not worth consideration.

Does the use of superheated steam economize the fuel? The answer to this question must be in the affirmative; facts are stubborn things, and we have just now ample proof that the economy arising from superheating steam is a fact.

Then, whence does this great economy of 20 and 30 per cent. arise? Is there some new and mysterious property given to the steam in the process of superheating? or can the improvement resulting be accounted for in an ordinary and common-sense way? We believe it can.

The result arising from the use of the superheated steam reflect severely and most justly on the positive ignorance of steam engineers. How is it that there is sufficient waste heat from the boiler furnace in the present boilers, to supply the additional heat to the steam? We excuse an answer, as there are so many other considerations intermixed with the question. One thing is quite certain, that if the exact cause of the economy is not understood, steamship owners, at least, appreciate the result.

As far as can be judged from the best information and the most reliable experiments on the effects of supplying steam with heat in addition to that acquired in its generation, there is reason to believe that the practical effect of such addition, is simply to prevent the condensation in pipes and cylinders before referred to.

There are two facts connected with superheated steam that deserve especial attention.

The first is that steam, having a temperature due to its pressure, may, whilst in contact with the water, have an additional temperature of say 100° given it, so that the steam in contact with the superheated flue may be 350°, whilst the steam and water below it are only 250°.

The second fact is that superheating steam appears to have little or no effect on its pressure; thus we have seen steam of 250° superheated to 360°, with little or no difference in the pressure—indicating that superheating isolated steam does not, *per se*, give much increased power. The question that engineers have to decide is whether the fuel is best consumed in superheating, or generating steam.

Strictly speaking, we have no right to say so much on this subject, as it is at the present time quite an exceptional one; but we hail it as an omen of better times, and a great blessing to steam engineers, tending to make them more reflective.

Steam jackets or casings around the cylinders of steam engines are also recommended to counteract the premature condensation of the working steam. With few exceptions their adoption has given increased duty for a given consumption of fuel; and, in fact, if there is a loss of 20 or 30 per cent. by premature condensation—a fact we believe fully proved—it is quite certain that a casing about the cylinder, must of necessity prevent this loss. The question then remains as to the cost of supplying these casings; and here we undoubtedly require more definite and reliable information. Steam casings being the exception, and not the rule, experimenters have been few and far between; and unless special arrangements are made, it is difficult to estimate the relative values of the power lost by condensation in the casing, and the power gained by preventing condensation in the cylinder.

The amount of steam condensed in the casings is stated variously from 3 to 12½ per cent. of the total steam generated; in no case has it been found to exceed 12½; indeed, the average may be taken at much below that amount.

If, therefore, as has been proved beyond a doubt, the condensation in the cylinder amounts often to 30, and that in the jacket we will say to 10 per cent., the result is a saving of 20 per cent.

Again, in the cylinder the per centage of condensation increases so rapidly with the increase of expansion, that the economy due to the increased expansion is almost neutralized; hence it is that we have never derived, and never can derive, from expansion in non-heated cylinders, the results that may be always obtained when the normal temperature of the working steam is maintained.

In steam-casings the condensation is practically uniform at all rates of expansion, and is almost uniform in point of time. Not so the working steam; it makes all the difference whether 3 lbs. or 6 lbs. weight of steam is used per stroke; in the first case (in general terms) the condensation is 30, and in the second only 15 per cent.

With those who deny that steam-casings are economical, the reason almost universally given for that denial is, that it does not matter whether the condensation takes place in the casing or in the cylinder, as the amount is the same in both cases. This is only a rough and ready way of burking a subject not understood.

If practice indicates opinion, steam-jackets have little to hope for from the present race of engineers. Nevertheless there are a few who at least will fairly set the question at rest by experiment before they form a decided judgment thereon.

Where money is plentiful it is freely spent, and the same may be said of fuel,—with this difference—that, in the former case, a man does get something which he considers the value of his money, whilst with fuel we spend a shilling and obtain two pence as returned value.

It is quite unnecessary, even in 1859, to take any trouble to prove that 1 lb. of steam expanded in the cylinder will give out a greater power than 1 lb. not expanded; and that the power obtainable from 1 lb. of steam increases in a certain ratio with the expansion.

This remark brings us to the second point of our present subject:—the use we make of steam in a steam engine.

It must be admitted that the expansive property of steam has been generally appreciated, and of all improvements tending to economy, has had the most supporters; and yet even this most important branch of steam engineering is neglected by the bulk of those who supply and use steam power. Is it not a fact that, on land and sea, an efficient expansion valve gear is the exception, and not the rule?

Pumping, water-works, and some other large land engines, are often fitted with arrangements for expanding to any extent; but take the thousands of small engines from 6 to 60-horse power, and, as a general rule, they have no expansion gear.

In marine engines the neglect on this point is perfectly unaccountable, and most discreditable. When an attempt is made to expand, how is it done? Why, generally, either by the link-motion, which is quite useless for large cylinders, if an expansion of four times is required; or by the cam and throttle, the latter often placed some distance from the main slide, with all the disadvantages of such an arrangement.

The introduction of the link-motion is one of the few solid improvements of the present day; for, although it can only be considered as a step in the right direction, it has been invaluable as a mechanical arrangement, and has been one of, if not the chief cause of so much more attention to the economy of expanded steam. The marine engineer must regard the link, as a reversing gear, almost with positive affection; so handy, so certain, and, at the same time, such a fair apology, as the times go, for an expansion gear.

But the link will not enable us to expand the steam six, seven, eight, and nine times.

Before the introduction of double-ported valves in marine engines, perhaps no cut-off could be more effectual than the additional slab slide on the back of the main slide, and worked by a separate eccentric, arranged with a segment to alter the expansion at pleasure; and this plan is increasingly adopted in land engines as simple and effective. We only mention it as a plan perhaps more generally approved than any other.

With the prospect of increased pressure and increased economy, a simple and effective expansion is a great desideratum. It is quite beyond the purpose of these remarks to do more than point out the want.

The naked truth is, that the mass of steam engines are not fitted with expansion gear, and the owners of such are spending a shilling where six pence would more than suffice; the old story.

The link motion is better adapted for locomotives than any other description of steam engine, but yet it does not fulfil the conditions necessary for the most profitable expansion of 150 lbs. steam.

Notwithstanding the convincing arguments of those who uphold that low pressure is more economical than high pressure steam, it is to be feared the tendency of the age is to go up the pressure scale as rapidly as vessels can be invented adapted for such increased pressure; and we have a conviction not easily removed that this tendency is a progressive one. A few years ago, 10 lbs. per square inch was a high pressure for marine boilers; now 20 lbs. is the usual pressure in new contracts, whilst 25 and 30 lbs. are not uncommon; either, therefore, the low pressure advocates must be in error, perhaps through not having clearly ascertained the value of some $x y$ in their calculations, or—sad alternative—our progress is retrogressive.

As far as our judgment and experience can be relied on, we hold the opinion that the full economy obtainable from steam as a motive power can only be realized by employing the highest pressure of steam compatible with safety; and we also believe this opinion is held so strongly by our first engineers, that it will be exemplified in their practice to such an extent as improvements in the generators will permit.

The very method of designing engines prohibits much benefit from expansion. The diameter and length of cylinder is first decided on, and then a boiler is designed to fill that cylinder at least half full per half stroke; and, as the boilers weaken by age, the pressure and expansion are reduced together, so that a disgraceful beginning has a miserable end.

This defect in designing is very frequent with marine engines, for, in consequence of salt incrustation, a reduction of the pressure is more certain, and occurs earlier, than in land engines.

The generator should be the starting point of design; there should be no difficulty with a thoughtful and observant engineer in ascertaining what quantity of steam can be supplied, of a given pressure, with a fixed rate of combustion, and a fixed ratio between it and the heating surface. Having fixed his ratio of supply, he can, with the most undeviating certainty, decide on his revolutions, rate of expansion, capacity of cylinder, and actual power required. But no; this, the most easy, most rational process, is considered the most difficult, and your practical man tells you that to get a certain speed out of a ship, "if you have a 50-inch cylinder, you will do it." Do it? yes, as many an unfortunate ship-owner has been "done."

Before leaving this part of the subject, it may be as well to allude to the advantages alleged to be derived from the combination of a high and low pressure cylinder; and it must be admitted that such engines have been more economical than ordinary single cylinder engines. But why is this so? Is it in consequence of the two-cylinder arrangement? This has never been proved. The reason we believe to be simply this—that all double cylinders are necessarily, by their very construction, expansion engines; whereas the cases are rare in which the single cylinder is fitted

to carry out the expansion to an equal extent. With an equal amount of expansion, the single cylinder should be the most economical; at the same time, the double cylinder arrangement, although more complicated, has the most even motioned during high expansion.

We have purposely avoided any theorizing as to the realized increased duty from various rates of expansion, as such information can be obtained from many sources. By a proper use of the expansive property of steam alone, we can effect a certain saving of at least one-half of the present cost of steam power.

Our next and last subject is connected with the disposal of the steam.

In locomotives and non-condensing engines the waste occasioned by the escaping steam will be in inverse proportion to the rate of expansion, and the abstraction of heat to raise the temperature of the feed-water. With reference to the latter, a saving of from 10 to 15 per cent. may always be obtained by passing the exhaust through or over the feed-water; but even this simple arrangement is often neglected—indeed, it is so in the majority of cases.

In condensing engines it is of great importance to reduce to a minimum the units of heat passed into the condenser; and here again we recognize the importance of extreme expansion and no premature condensation. Any defect that allows 2 lbs. of steam to do only the work of 1 lb. is not only a first loss in itself, but ultimately it injures the efficiency of the condenser by admitting into it nearly the total heat contained in 2 lbs. of steam, instead of only that contained in 1 lb. Hence, it is a proved fact, that with superheated steam or steam jackets, much less water is required to condense a horse-power of steam.

In speaking of steam generation, we called attention to the apparent necessity of the loss arising from the escape of the heated gases requisite for a draft; and now, in concluding our remarks on the disposal of the steam, we have to confess that the discharge of a large mass of heated water appears an unavoidable loss; we take only some 4 per cent. of it to feed the boiler, and the remaining 96 per cent. is wasted. The temperature of the feed-water thus supplied, averaging 100°, may always be raised to 200° or more, by abstracting the heat from the brine, discharge, or scum, but it is not.

With steam of 20 lbs., a vacuum of 10 or 12 lbs. is an important addition, but it is questionable whether the addition of 10 lbs. to a pressure of 150 will repay the cost of fitting and working the air pumps; all will depend upon the extent of expansion.

And now a word about surface condensation, and the advantages to be derived from its introduction into steamships.

It would be difficult to overrate those advantages. A saving of at least 20 per cent. of fuel—clean pumps—small air-pumps—regularity of feed—and, above all, the consequent introduction of high pressure steam.

It is matter of surprise and regret that such authorities as Mr. J. Scott Russell and Mr. Bourne should inform the young engineer that surface condensation is not sufficiently rapid. This is a bug-bear that has haunted many, and tended to repress an improvement that will not be repressed. It is not for us to say how or when surface condensation will be generally introduced; we can only put, on the one side, the many advantages its introduction creates, and, on the other, the trifling mechanical difficulties to be overcome, to effect its adoption. And who will question the result?

Next month we shall allude to the mechanism of the steam engine; and, in the following number, concludes the series with a resume of the whole points touched upon.

(To be continued.)

Ogdensburg Railroad Bonds.

The time of payment of coupons on the Ogdensburg 1st mortgage bonds has been changed from April and Oct. to Jan. and July, and the bonds are to be extended for 10 years from 1st July, 1859.

RAILROAD SHARE LIST, including Mileage, Rolling Stock, etc., etc.

An asterisk (*) occurring in the column headed "Rolling Stock," signifies that the cost is included in that of "Railroad and Appurtenances." A dash (—) signifies "nil." Running dots (....) signify "not ascertained." Land-Grant Railroads are in *italics*.

Years ending.	Railroad.				Equipment.				Companies.	Abstract of Balance Sheet.										Earnings.			
	Main Line.	Lateral and Branch Lines.	2nd Track and Sidings.	Bond in progress or projected.	Cars.			Property and Assets.		Liabilities.					Total, incl. all other assets and liabilities.	Road operated, incl. road leased, etc.	Mileage run by locomotives with trains.	Gross.	Net.	Dividends.	Price of shares.		
					Engines.	Passenger.	Freight, etc.			Railroad and Appurtenances.	Rolling-Stock.	Invested in foreign works.	Share Capital paid in.	Bonded and Mortgage Debt.								Floating Debt.	
	M.	M.	M.	M.	No.	No.	No.		\$	\$	\$	\$	\$	\$	\$	M.	M.	\$	\$	P. c.	P. c.		
ALABAMA.																							
30 Jan. '59	42.3				72.3	3	2	19	Alabama and Florida	1,086,278	*		539,396	473,500	101,203	1,127,174	27.3		59,430	22,359			
28 Feb. '59	30.3				58.1	2	2	19	Al. bama and Mississippi	461,505	30,991		335,010	109,600	21,632	518,965	30.8		55,791	31,852			
31 May '59	99.2				68.4	7	7	84	Ala. and Tennessee Rivers	2,101,007	144,549		1,054,915	713,226	212,496	2,264,468	99.2		165,628	78,907			
30 Jan. '59	57.0				171.3				Mobile and Girard	1,500,000							57.0		236,791	76,773	21,006		
1 Jan. '59	319.2	14.7			213.0	25	18	361	Mobile and Ohio	7,282,801	681,859	114,894	3,441,859	4,051,547	726,546	8,360,702	202.0		372,300	769,787	420,000		
28 Feb. '59	88.5	28.4			206.8	20	14	272	Montgomery and West Point.	1,819,403	279,435	100,000	1,419,672	922,621	18,956	2,462,492	110.9		446,153	211,580	6		
16 Dec. '59					26.1				North East and South West	728,000			105,760										
ARKANSAS.																							
30 Nov. '59	88.5				301.4				Cairo and Fulton														
30 Nov. '59	88.5				107.5				Memphis and Little Rock	553,877	*		351,524	446,000	10,725	811,949							
30 Sep. '59	22.5				41.8				Sacramento Valley	1,547,100	*		791,100	756,000		1,547,100	22.5		211,420	115,076			
CONNECTICUT.																							
31 Jan. '59	23.9				3	6	30		Danbury and Norwalk	333,237	49,773		279,050	85,000	3,502	404,622	23.9		56,044	20,618	6		
30 Sep. '59	122.4				75.1	16	20	250	Hartford, Provid. and Fishkill	3,903,455	302,511		1,936,740	1,510,500	319,443	4,323,922	122.4		333,500	152,777			
31 Aug. '59	61.4	10.6							Hartford and New Haven	3,108,018	254,000	102,889	2,350,000	964,000	16,463	3,932,432	72.0		723,460	204,134	10	127	
31 Dec. '59	74.0				11	19	212		Housatonic	2,438,847	*	8,559	2,000,000	278,500	76,676	2,555,837	159.0		271,273	66,330			
31 Dec. '59	67.0				7	15	178		Naugatuck	1,578,301	*		1,031,800	437,550	30,713	1,706,802	57.0		199,536	314,068			
30 Nov. '59	62.3								N. Haven, N. London and Ston.	1,470,661	*	11,050	738,538	750,000		1,488,538	60.1		76,758	8,946			
31 Dec. '59	46.4	8.8							New Haven and Northampton	1,400,000	*		922,500	500,000		1,481,723	55.2		158,652	10,000	5		
30 Nov. '59	60.0				5	5	107		N. Lond., Willimant. & Palmer	1,561,241	5,453	5,453	510,900	1,055,800	272	1,575,147	66.0		91,134	104,464	30,512		
31 Mar. '59	62.2				29	72	368		New York and New Haven	4,579,879	661,547		3,000,000	2,219,000	33,038	5,582,431	74.0		432,024	828,092	315,832	3	
31 Mar. '59	68.0	7.0							Norwich and Worcester	2,245,406	176,792		2,522,300	324,130	59,614	2,598,672	66.0		265,417	44,587		37	
DELAWARE.																							
31 Dec. '59	71.0				19.4				Delaware	1,146,311	*		252,561	735,000	123,750	1,146,311	71.0		66,628				
30 Nov. '59	14.3								Newcastle and Frenchtown	699,514		25,000	762,320			767,273	14.3		19,895				
FLORIDA.																							
30 Apr. '59	154.2				45.1				Florida	292,291	*		317,847	154,000	70,620	543,237							
30 Jun. '59	31.3				20	28.6	2	1	Fla., Atlantic and Gulf Central	396,310	28,608		205,781	204,000	164,670	594,836	19.3		10,255	1,504			
30 Sep. '59	26.5	3.9			227.0				Pensacola and Georgia								29.4						
GEORGIA.																							
31 July '59	86.7				15	11	105		Atlanta and La Grange	1,179,381	*		1,000,000	187,500	23,384	1,459,075	86.7		382,091	197,357	8	125	
30 Sep. '59	30.0				133.5				Atlantic and Gulf—M. Trunk								30.0						
31 Dec. '59	83.0								Augusta and Savannah	1,032,200	*		733,700	298,500		1,032,200	53.0		125,427	69,679			
30 Apr. '59	43.5				23.7				Brunswick and Florida	755,000	*		151,887				31.0						
30 Nov. '59	191.0				54	28	636		Central of Georgia	3,750,000	826,171	826,171	3,750,000	106,267		5,977,106	229.0		790,030	1,633,947	899,604	10	
31 Mar. '59	171.0	61.0							Georgia (and Bank)	4,174,492	829,550	829,550	4,150,000	373,000		7,368,665	232.0		1,154,621	544,363	8	100	
30 Nov. '59	102.5				18	16	171		Macon and Western	1,500,000	*		1,488,500	23,000	7,101	1,967,776	102.5		213,180	375,250	209,785	11	
31 July '59	60.0				7	2	107		Muscogee	774,244	162,534		669,950	249,000		1,026,898	50.0		202,714	110,516	8	102	
1 May '59	68.1				3	4	33		Savannah, Albany and Gulf	1,386,634	52,373		1,275,901	10,200	180,621	1,473,140	71.6						
31 July '59	106.1	56.5	14.8		15	18	166		South Western	3,165,000	*		2,254,000	631,000		2,254,000	147.2		171,758	547,876	337,769		
30 Sep. '59	138.0				52	24	705		Western and Atlantic	5,901,497	*		built and own'd by State.				138.0		832,343	454,541			
ILLINOIS.																							
30 Apr. '59	220.0				62	31	990		Chicago, Alton and St. Louis	10,000,000			3,500,000	4,500,000		10,000,000	220.0						
31 Dec. '59	45.0				6	14	101		Chic., Burlington and Quincy	6,068,054	1,400,872	680,158	4,629,340	2,990,000		8,149,084	210.0		1,044,573	171,515		60	
30 Jun. '59	181.8				58	57	960		Chicago and Milwaukee	1,799,894	67,869	120,000	988,000	762,865	188,085	2,050,065	45.0		243,282	135,284			
20 Jun. '59	181.8								Chicago and Northwestern	4,250,000	6,350,000	2,500,000	6,350,000	138.0									
10 Nov. '59	33.2								Chicago and Rock Island	6,776,119	175,165	175,165	5,603,000	1,397,000	5,651	7,543,104	228.4		1,407,846	629,029		64	
31 Dec. '59	121.0	138.5	73.6		60	63	1,369		Fox River Valley	580,000	*		580,000				84.0						
31 Dec. '59	175.0				113	96	2,306		Galena and Chicago Union	8,027,473	1,311,917	211,003	6,029,400	3,788,015	292,466	10,300,517	326.5		808,231	1,547,561	620,328	4	
31 Dec. '59	464.8	252.5			81.5				Great Western	5,022,926	*		1,600,000	3,088,426	334,500	5,022,926	175.0						
									Illinois Central	19,674,214	3,347,799		10,249,210	20,000,000	1,297,277	31,596,487	708.3		1,976,578	556,624		61	
									Illinois River		*												
									Ohio and Mississippi	4,870,586	*		1,780,295	3,292,403			148.0						
									Peoria and Bureau Valley		*		600,000				oper. by Chic.		& R. Is.	125,000			
									Peoria and Hannibal		*						186.0						
									Peoria and Oquawka	5,400,000	*		1,569,889	2,200,000			oper. by Chic.		Bur. & R. Is.	Quincy.			
									Quincy and Chicago	1,978,555	*		800,000	1,200,000		2,000,000	100.0						
									Rock Island Bridge		*						oper. by Chic.		& R. Is.				
									Terre Haute, Alton & St. Louis	7,608,958	628,487		3,026,903	5,035,615	741,040	8,865,252	208.3		823,767				
INDIANA.																							
31 Aug. '59	109.0				73.0				Cincinnati and Chicago	2,080,433	*		1,196,679	1,006,125			108.0						
31 Aug. '59	109.0								Cincinnati, Peru and Chicago		*						29.0						
1 Jan. '59	72.4								Evansville and Crawfordsville	2,233,413	2,750		986,061	1,219,100	51,772	2,283,748	109.0		249,867	119,432			
31 Jan. '59	109.0				19	21	278		Indiana Central	1,666,280	244,081	25,641	611,050	1,166,000	47,850	2,111,050	109.0		368,189	132,004	6	58	
31 Dec. '59	89.8	20.2			23	19	313		Indianapolis and Cincinnati	2,497,952	540,043	25,689	1,899,900	1,362,284	140,689	3,455,108	110.0		448,858	230,834	9	38	
31 Dec. '59	64.0								Ind., Pittsburg and Cleveland	1,904,956	*	10,000	835,971	1,025,200	19,719	2,109,336	84.0		232,906	92,859			
31 Aug. '59	78.0								Jeffersonville	1,839,576	*		1,014,252	681,000	99,400		108.0		222,737	74,328			
30 Jun. '59	64.0								Lafayette and Indianapolis	1,850,000	*		1,000,000	600,000			64.0						
30 Jun. '59	64.0								Madison and Indianapolis	2,984,516	*		1,647,700	1,336,516			135.0		206,114	82,632			
30 Jun. '59	64.0								Louisv. N. Albany & Chicago	6,000,000	*			3,000,000	2,000,000	6,000,000	288.0		645,827	371,402			
30 Jun. '59	64.0								Peru and Indianapolis	2,000,000	*		1,100,000	820,000	80,000		74.0						
30 Nov. '59	78.0				18	25	298		Terre Haute and Richmond	1,611,450	26,029	1,381,450	230,000			1,867,423	73.0		254,742	357,297	182,154	10	
IOWA.																							
1 Jun. '59	75.5				201.5				Burlington and Missouri	1,													

RAILROAD SHARE LIST, including Mileage, Rolling Stock, etc., etc.

An asterisk (*) occurring in the column headed "Rolling-Stock," signifies that the cost is included in that of "Railroad and Appurtenances." A dash (—) signifies "nil." Running dots (....) signify "not ascertained." Land-Grant Railroads are in "italics."

Years ending.	Railroad.				Equipment.			Companies.	Abstract of Balance Sheet.										Earnings.				Price of shares.	
	Main Line.	Lateral and Branch Lines.	2d Track and Sidelings.	Road in progress or projected.	Engines.	Cars.			Property and Assets.					Liabilities.					Total, incl. all other assets and liabilities.	Road operated, incl. road leased, etc.	Mileage run by locomotives with trains.	Earnings.		
						Passenger.	Freight, etc.		Railroad and Appurtenances.	Rolling-Stock.	Invested in foreign works.	Share Capital paid in.	Bonded and Mortgage Debt.	Floating Debt.	Gross.	Net.								
M.	M.	M.	M.	No	No	No.														P. c.	P. c.			
MAINE.																								
31 Dec. '58	32.0			6.0	4	25	Androscoggin	645,271	*			145,787	511,500				32.0	22,001	30,957	17,268				
31 May, '59	55.0				9	10	128	Androscoggin and Kennebec	2,210,947		27,925	457,900	1,748,457	101,209	2,307,566	137.0	73,186	281,929	89,766					
30 Jun. '59	149.0		25.0		41	17	349	Atlantic and St. Lawrence	6,066,375	857,566		2,494,900	3,472,000	9,572	5,976,472	149.0	429,701	545,741	150,226					
31 Dec. '58	12.5				4	2	43	Bangor, Oldtown and Milford	175,232	*		135,000			175,516	12.5	25,437	33,059	16,890					
31 Dec. '58	63.0	9.0			12	11	109	Kennebec and Portland	2,871,204	*		1,107,526	1,763,738			72.5	169,240	145,074	70,740					
31 Dec. '58				23.0			93	Penobscot	308,413	*		180,000	143,678											
31 May, '59	54.7				4	10	93	Penobscot and Kennebec	1,611,413	104,019	78,014	555,228	1,206,800	128,576	1,890,604	54.7	oper. by An. & K.	67,524						
31 May, '59	51.3				11	13	118	Portland, Saco and Portsmouth	1,494,792	*	5,208	1,500,000			1,500,000	51.3	141,664	208,299	104,029		95			
31 May, '59	37.0							Somerset and Kennebec	783,763	*		169,200	556,600			37.0		55,408	28,404					
31 May, '59	18.5			33.5				York and Cumberland	1,090,000	*		370,000	450,000	270,000	1,090,000	18.5								
MARYLAND.																								
30 Sep. '59	279.6	7.2		235	124	3,272	Baltimore and Ohio	21,225,164	3,576,251	3,006,740	10,111,800	13,881,833	292,428	30,278,377	286.8	3,648,814	3,618,618	1,933,021			704			
30 Sep. '59	30.0				7	33	167	Washington Branch	1,650,000			1,650,000			1,824,806	30.0	187,427	442,219	268,540		100			
31 Dec. '58	138.0	4.0			42	38	1,455	Northern Central	6,843,457	733,934	220,966	2,260,000	5,395,800	655,507	8,681,567	154.5	606,482	810,604	364,949		164			
MASSACHUSETTS.																								
30 Nov. '59	21.2		2.0		6	4	80	Berkshire	500,560	100,000		600,000			601,360	oper. by Housat.	42,000				7			
30 Nov. '59	26.8	1.8	43.6		21	26	566	Boston and Lowell	2,245,247	183,345		1,830,000	440,000	5,365	2,671,887	28.6	352,512	531,477	208,798		101			
30 Nov. '59	74.3	8.8	51.3		30	43	560	Boston and Maine	3,846,683	373,057	105,987	4,076,974			4,523,400	83.1	540,372	860,119	394,475		107			
30 Nov. '59	47.0	7.0	22.3		22	27	210	Boston and Providence	2,952,600	207,400	70,000	3,160,000	174,220		3,663,138	54.0	316,522	654,673	337,948		106			
30 Nov. '59	44.6	24.0	59.2		30	56	300	Boston and Worcester	4,291,164	437,416	100,000	4,500,000	500,000	29,595	5,751,512	83.7	511,046	1,067,071	311,525		106			
30 Nov. '59	46.1	1.1	2.7		7	10	109	Cape Cod Branch	907,761	123,864		81,690	190,000	39,499	1,092,268	47.2	79,456	118,728	49,374		106			
30 Nov. '59	50.0	2.4	8.9		12	13	331	Connecticut River	1,614,385	187,558		1,591,100	252,500		1,928,284	75.4	177,164	271,592	138,223		44			
30 Nov. '59	44.1	30.5	24.4		55	46	368	Eastern	4,134,575	456,424	250,000	2,853,400	2,030,500	60,510	4,944,409	120.7	426,161	698,409	325,905		105			
30 Nov. '59	19.9	1.3	3.6		29	28	655	Essex	742,592	4,416		299,107	280,261	197,428	776,796	oper. by Eastern	11,663				67			
30 Nov. '59	50.9	16.8	70.9		29	28	655	Fitchburg	3,190,851	350,149		3,540,000			3,869,729	67.7	341,503	659,485	267,450		98			
30 Nov. '59	14.0	2.4			3	3	37	Fitchburg and Worcester	293,658	40,226		214,296	62,900	300	333,884	26.4	37,246	48,768	12,795		98			
30 Nov. '59	24.9							Hampshire and Hampden	577,582			298,951	303,014	57,065	663,080	oper. by N. H. & N. H.	28,791				6			
30 Nov. '59	12.4		2.3		2	3	27	Lowell and Lawrence	332,883	30,275		200,000	100,000		363,158	oper. by B. and O. L. I.	12,550				6			
30 Nov. '59	14.6		17.1		12	12	324	Nashua and Lowell	558,920	95,683		600,000			698,563	30.9	153,374	229,206	68,510		6			
30 Nov. '59	20.2	1.6	1.0		7	16	146	New Bedford and Taunton	494,843	52,644		500,000		19,800	564,707	21.8	55,881	143,261	25,264		8			
30 Nov. '59	26.9		2.3		6	9	44	Newburyport	585,272	63,696		220,240	221,000		211,698	653,533	36.0	75,866	51,338	14,087		8		
30 Nov. '59	8.6			23.4				N. York and Boston Air Line	673,302			223,178	675,000	2,853	901,029	8.4	20,888	22,631			104			
30 Nov. '59	79.5	7.8	25.6		27	46	358	Old Colony and Fall River	3,028,445	334,503		3,015,100	134,500	60,900	3,930,269	87.3	410,591	646,755	306,413		6			
30 Nov. '59	18.6		0.7		1	2	—	Pittsfield and North Adams	432,430	11,247		450,000			450,000	18.6	32,480	48,355	127,000		104			
30 Nov. '59	43.4	1.0	14.9		12	14	384	Providence and Worcester	1,506,977	254,566		1,510,200	300,000		1,810,200	44.4	216,327	341,836	136,386		6			
30 Nov. '59	16.9		1.7		3	3	—	Salem and Lowell	366,987	82,543		243,305	226,900	316	470,521	oper. by B. and O. L. I.	17,500				103			
30 Nov. '59	11.5		0.4		2	7	17	South Shore	462,167	39,426		259,685	153,290	2,821	513,112	11.5	26,026	68,784	15,463		7			
30 Nov. '59	21.9		1.0					Stockbridge and Pittsfield	448,700			448,700			451,000	oper. by Housat.	31,400				97			
30 Nov. '59	11.1	0.6	1.3		7	18	144	Taunton Branch																
30 Nov. '59	6.1			36.5				Troy and Greenfield	478,048			385,206	219,000	9,954	614,006	oper. by T. and B.	5,333							
30 Nov. '59	69.0	8.0	5.5		11	8	192	Vermont and Massachusetts	3,309,622	207,343		2,214,225	1,003,880		3,516,865	77.0	107,478	246,798	106,317		12			
30 Nov. '59	156.1	17.3	106.8		72	47	1,149	Western (incl. Alb. & W.S. etc.)	9,934,566	1,095,713		5,150,000	6,125,520	208,726	13,457,921	192.0	1,020,064	1,767,068	830,148		111			
30 Nov. '59	45.7		9.3		10	8	149	Worcester and Nashua	1,187,935	140,962		1,141,000	194,500	892	1,403,409	45.7	179,490	216,444	94,244		69			
MICHIGAN.																								
1 Jun. '59	17.3			2.7	2	1	100	Bay de Noquet and Marquette																
30 Sep. '59	57.0							Chic. Detroit & Can. G. T. Junc.	built and equip	ed by G. R. Tr. K. R. Co. of Canada														
1 Jan. '59	188.0							Detroit and Milwaukee	8,270,623	647,596		2,329,155	4,707,500		9,008,309	188.0		365,038	144,270					
				183.0				Flint and Pere Marquette	8,270,623	647,596		2,329,155	4,707,500		9,008,309	188.0		365,038	144,270					
31 May, '59	284.0				98	123	1,528	Grand Rapids and Indiana	12,847,238	*	1,149,069	6,057,840	8,284,063	119,089	14,548,411	329.0		2,417,915	886,697		45			
1 Mar. '59	246.0	293.0			91	135	976	Michigan Central	14,517,892	1,007,906	1,312,534	8,975,400	9,343,000	816,460	19,595,407	539.0		2,019,425	777,273		10			
				89.8				Mich. S'th'n & N'th'n Indiana																
								Port Huron and Milwaukee																
MINNESOTA.																								
								Minnesota and Pacific					600,000											
								Southern Minnesota					575,000											
								Minnesota and Cedar Rapids					600,000	191,130										
								Minnesota Transit					500,000											
								Root River Valley																
MISSISSIPPI.																								
1 May, '59	146.5			47.7	11	6	155	Mississippi Central	3,395,965	*		1,641,947	1,546,393	383,129	3,717,499	146.5		239,585	117,371					
1 Oct. '59	71.4			27.8	7	4	41	Mississippi and Tennessee	1,254,894	159,018		798,285	456,949	275,060	1,974,444	59.7		176,462	116,433					
31 Dec. '58	83.2			60.4				Southern Mississippi	2,750,000	*		1,000,000	1,400,000			83.2		250,047	121,659					
MISSOURI.																								
30 Nov. '58	12.0			65.8	1			Cairo and Fulton	281,645	9,200		50,493	327,000	50,892	128,386	12.0								
30 Aug. '59	206.8							Hannibal and St. Joseph	10,147,907	814,301		1,770,612	8,768,000		10,961,308	206.8	14 mo's	497,						

RAILROAD SHARE LIST, including Mileage, Rolling Stock, etc., etc.

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Years ending.	Railroad.				Equipment.			Companies.	Abstract of Balance Sheet.							Earnings.					
	Main Line.	Lateral and Branch Lines.	2nd Track and Sidings.	Road in progress or projected.	Engines.	Cars.			Property and Assets.			Liabilities.				Total, incl. all other assets and liabilities.	Road operated, incl. road leased, etc.	Mileage run by locomotives with trains.		Earnings.	
						Passenger.	Freight, etc.		Railroad and Appurtenances.	Rolling-Stock.	Invested in foreign works.	Share Capital paid in.	Bonded and Mortgage Debt.	Floating Debt.	Gross.			Net.	Dividends.	Price of shares.	
																					No.
30 Sep. '58	M.	M.	M.	M.	No.	No.	No.									M.	M.			P. c.	P. c.
NEW YORK.																					
30 Sep. '58	32.9		3.3	140.0	5	12	53	Albany and Susquehanna	227,356			275,793		8,097		32.9	93,894	84,119	11,215		
30 Sep. '58	38.3		34.0					Albany, Vermont and Canada	1,557,502	136,098		439,005	1,575,099	50,000		37.5	34,424	60,524	32,413		6
30 Sep. '58	34.9	2.6			73.6	4	39	Albany and West Stockbridge	2,289,934			1,000,000	1,289,934			37.5	34,424	60,524	32,413		
30 Sep. '58	14.8		1.6					Black River and Utica	1,153,069	81,405		804,048	662,500	52,570		14.8	10,530	23,554	9,204		5
30 Sep. '58	142.0		18.6	18.6	28	32	386	Blossburg and Corning	496,661			250,000	220,000			14.8	10,530	23,554	9,204		
30 Sep. '58	68.3		18.0		28	34	312	Buffalo, New York and Erie	3,150,762		164,200	680,000	2,592,221	252,142	4,206,709	176.0	356,145	814,116	359,609		6
30 Sep. '58	24.6		38.1					Buffalo and State Line	2,400,251	312,736		1,913,000	1,049,000	172,738		34.6	59,539	59,421	5,092		
30 Sep. '58	17.4		2.1					Cayuga and Susquehanna	1,016,058	79,542		687,000	426,000	7,042		34.6	59,539	59,421	5,092		
30 Sep. '58	46.8		2.9		10	8	83	Chemung	400,000			380,000	70,000			34.6	59,539	59,421	5,092		
30 Sep. '58				63.2				Elmira, Canandaigua & N. Falls								34.6	59,539	59,421	5,092		
30 Sep. '58				15.0				Erie and New York City	287,708			352,742	14,000	23,716	396,416	34.6	59,539	59,421	5,092		
30 Sep. '58					6	3		Genesee Valley	91,889			59,374	38,500			34.6	59,539	59,421	5,092		
30 Sep. '58	17.3		0.6		52	107	542	Hudson and Boston (West'n)	148,000	27,000		175,000				17.3	49,519	58,207	10,840		6
30 Sep. '58	144.0		106.5		73.8			Hudson River	10,305,906	1,182,372		3,758,466	8,842,000	414,644		150.0	700,224	1,842,636	770,090		40
30 Sep. '58				182.0				L. Ontario, Auburn & N. York	74,203			76,771									
30 Sep. '58								L. Ontario and Hudson River	3,497,538	178,320		2,715,186	870,000	115,856							
30 Sep. '58	84.0	2.5	10.1		18	37	129	Long Island	2,211,659	554,611		1,852,715	636,997	17,539	2,507,270	101.5	248,123	334,105	147,084		114
30 Sep. '58	297.8	268.1	313.8		211	237	3,171	New York Central	25,164,200	5,257,077		558,980	24,000,000	14,333,771	40,366,005	655.9	3,945,128	6,200,548	2,701,419		7
30 Sep. '58	140.0	10.0	282.5		210	183	2,684	New York and Erie	35,320,907			1,311,835	11,000,000	25,260,000	2,141,300	38,401,300	3,000,309	4,482,149	1,404,837		123
30 Sep. '58	130.8	2.1	30.9		35	39	490	New York and Harlem	7,308,339	634,777		5,717,100	5,151,287	147,640		152.9	621,747	975,853	358,792		16
30 Sep. '58	118.0	3.8	17.7		28	8	417	Northern (Ogdensburg)	4,086,712	702,079			1,494,000			121.8	311,044	410,806	127,015		
30 Sep. '58	35.0		2.2		7	6	44	Oswego and Syracuse	675,215	100,462		396,340	213,500	10,875		35.9	69,759	109,152	60,829		8
30 Sep. '58	75.4		2.1		6	4	33	Pottsdam and Watertown	1,525,646	63,382		608,077	818,500	180,138		75.4	98,686	94,385	44,715		
30 Sep. '58	28.2		2.0		6	13	70	Rensselaer and Saratoga	745,977	156,573		610,000	140,000			40.2	89,580	205,225	53,946		3
30 Sep. '58	18.4		1.5	32.6				Rochester and Genesee Valley	655,539			555,450	150,000	30,417		18.4	32,980	37,280	18,500		2
30 Sep. '58	18.0		1.0		2	2	32	Sackett Harbor and Ellisburg	371,556	17,714		107,485	278,400	56,810		18.0	17,620	12,925			
30 Sep. '58	21.0		1.9		2	3	10	Saratoga and Schenectady	480,684			300,000	86,500			30.0					
30 Sep. '58	40.0	6.0	3.6		9	12	84	Saratoga and Whitehall	820,518	74,904		500,000	395,000	5,456		30.0					
30 Sep. '58				13.2				State Island	40,000			40,000				30.0					
30 Jun. '58	11.0							Brooklyn and Jamaica	369,856			284,850	85,000			30.0					
30 Sep. '58	81.3		7.1		13	12	117	Syracuse, Binghampt. & N. Y.	2,857,607			1,200,130	1,500,000	59,418		81.3	148,240	177,627	74,359		9
30 Sep. '58	27.2		3.2	7.7	7	4	65	Troy and Boston	1,298,302	125,887		568,297	797,500	231,083		27.2	61,614	125,042	58,289		
30 Sep. '58	6.0		0.1					Troy and Greenbush	258,658	36,073		275,000				30.0					
30 Sep. '58	2.1		2.1					Troy Union	732,114			80,000	680,000			30.0					
31 Dec. '58	98.8		11.0		7	11	298	Watertown and Rome	2,159,295		28,000	1,498,500	690,000	85,071	2,275,611	98.8	216,605	397,712	187,000		6
NORTH CAROLINA.																					
—	85.2	2.0						Atlantic and North Carolina	1,850,000			1,600,000	400,000			85.2					
—	223.0							North Carolina	4,235,000			4,000,000				223.0					
—	97.0							Raleigh and Gaston	1,240,241			973,300	126,200			97.0					
30 Sep. '58	161.0		17.1		22	20	144	Wilmington and Manchester	2,586,238		201,500	1,127,511	1,060,000	111,886	2,892,969	171.0	487,043	209,793			
30 Sep. '58	161.9				24	32	144	Wilmington and Weldon	2,869,223		107,000	1,340,213	791,055	102,391	3,114,954	171.0	823,069	477,554	235,201		8
15 Mar. '58				43.0				Western North Carolina	190,798		4,700	290,212		70,860	364,072						
OHIO.																					
31 Dec. '58	118.2				17	12	208	Atlantic and Great Western	613,231			866,939		77,294		118.2					
1 Aug. '58	137.0				41	39	508	Bellefontaine and Indiana	3,008,919		11,000	1,879,370	1,274,828	39,028	3,370,281	137.0	332,226	146,512			
31 Mar. '58	60.3				22	28	432	Central Ohio	5,579,508	922,670	106,133	1,628,356	3,673,000	1,126,458	6,810,432	60.3	597,633	71,356			
—	87.0				62.1			Cinc., Hamilton and Dayton	2,648,266	504,892	26,500	2,155,800	1,411,000	32,618	3,650,710	87.0	489,437	249,666	7 68		
1 May, '58	181.8				31.0	16	332	Cinc. and Indianapolis June	6,250,841			2,441,176	3,032,000	228,973		31.0	304,168	190,745	19,180		49
31 Dec. '58	135.4	5.8			42	31	439	Cinc., Wilmington and Zanev.	4,087,571	684,955	67,422	4,746,100	38,000	8,242	5,343,275	141.2	1,113,639	575,159		7	87
31 Dec. '58	67.0				18.0	10	205	Cleveland and Columbus and Cinc.	1,090,953			580,000	1,202,300	161,200	1,943,500	67.0	183,973	285,140	182,282		
31 Dec. '58	95.4	1.2	37.9		31	39	453	Cleveland and Mahoning	3,431,732	555,343	541,503	3,000,000	1,667,000	35,500	4,812,201	95.4	402,935	1,111,353	646,057		1104
30 Nov. '58	101.0	102.5			42			Clev., Painesville & Ashtabula	9,320,288			3,942,368	4,918,325	653,821	9,661,102	103.5	646,413	772,093	332,093		4
30 Apr. '58	109.2	79.4			32	62	430	Cleveland and Pittsburgh	6,729,056	458,194	258,424	3,343,812	3,842,720	358,605	7,858,918	109.2	798,155	144,456	6 254		
31 Dec. '58	61.4				53.0	5	99	Cleveland and Toledo	1,574,693			369,673	575,250	632,486		61.5	75,120	68,128	19,763		
30 Dec. '58	72.0				31.0	6	103	Clev., Zanesville and Cincln.	2,555,000			750,000	1,600,000	205,000		72.0	144,000	84,000	17,760		
30 Nov. '58	64.5		10.4					Columbus and Indianapolis	1,376,250	392,909	112,734	1,490,000	290,700	60,500	1,965,639	64.5	170,915	170,795	8 83		
31 Dec. '58	72.0				72.0			Columbus and Xenia	3,746,000			1,020,000	2,126,000			72.0	144,000	124,559	66,779		
31 Aug. '58	36.6				5	3	87	Dayton and Michigan	930,262	104,912		289,692	700,000	90,482	1,080,174	36.6	125,940	66,253			
31 Aug. '58	16.0				47.0.																

RAILROAD SHARE LIST, including Mileage, Rolling Stock, etc., etc.

An asterisk (*) occurring in the column headed "Rolling-Stock," signifies that the cost is included in that of "Railroad and Appurtenances." A dash (—) signifies "nil." Running dots (....) signify "not ascertained." Land-Grant Railroads are in "italics."

Years ending.	Railroad.				Equipment.			Companies.	Abstract of Balance Sheet.										Earnings.				Price of shares.
	Main Line.	Lateral and Branch Lines.	2nd Track and Sidings.	Road in progress or projected.	Engines.	Cars			Property and Assets.		Liabilities.				Total, incl. all other assets and liabilities.	Road operated, incl. road leased, etc.	Mileage run by locomotives with trains.	Gross.	Net.	Dividends.			
						Passenger.	Freight, etc.		Railroad and Appurtenances.	Rolling Stock.	Invested in foreign works.	Share Capital paid in.	Bonded and Mortgage Debt.	Floating Debt.									
M.	M.	M.	M.	No.	No.	No.																	
PENNSYLVANIA, (Continued.)																							
30 Nov. '56	48.0		3.1	99.5	4	4	43	Pittsburg and Connellsville	1,501,414	79,396		1,753,864	1,500,000	177,920	3,444,154	60.0		60,438					
30 Nov. '56	467.5		56.3		96	80	1,059	Pittsburg, Ft. Wayne & Chicago	13,474,664	1,785,182	91,100	6,265,964	9,356,505	1,806,040	17,628,509	467.5		1,768,993	492,721		39		
30 Sep. '56	31.0			11.0				Pittsburg and Steubenville	1,947,462			1,221,277	280,000										
30 Sep. '56	54.0		3.0		7	7	26	Schuylkill and Susquehanna	1,258,700			1,258,700	97,000		1,355,700	54.0							
30 Sep. '56	9.2	15.3	14.9					Schuylkill Valley	573,616			568,150			573,616	24.5		34,501	29,904	34			
30 Nov. '56	28.0	5.0	3.3		4	1	445	Shamokin Valley & Pottsville	1,321,847			500,000	821,447		1,321,847	33.0		96,227	54,582				
31 Dec. '56	148.0		20.0	140.0				Sunbury and Erie	6,393,712	107,252		4,506,920	4,369,070	861,271	10,169,960	148.0							
30 Nov. '56	29.6	6.5	31.9		8	3	127	Tioga	703,349	85,932		97,550	306,000			29.6		83,072	47,007	6			
30 Sep. '56	26.4		2.1		4	11	9	Westchester and Philadelphia	1,410,638	74,677		682,170	944,169	52,434	1,679,301	26.4		125,597	4,502				
31 Mar. '56	78.0							Williamsport and Elmira	3,650,682	380,847		1,500,000	2,361,973	161,272	4,148,920			191,970	96,308	1			
RHODE ISLAND.																							
31 Aug. '56	50.0		2.0		9	13	84	N. Y., Providence and Boston	2,158,000			1,508,000	306,500		2,158,000	50.0		147,231	208,439	96,571	5		
30 Nov. '56	13.6		0.5			3	5	Providence, Warren & Bristol	434,698	1,588		287,917	109,937	36,139		13.6		23,514	23,005	1,278			
SOUTH CAROLINA.																							
31 Dec. '56	13.2	1.5		182.4	2		26	Blue Ridge	2,126,539			1,916,515	217,577		2,134,092	13.2							
31 Dec. '56	54.9		47.4	4	3		21	Charlotte and Savannah	801,615	34,372	250,000	706,365	195,266	197,906	1,099,536	51.9							
31 Dec. '56	109.6				13	9	176	Charlotte and South Carolina	1,719,045			1,201,000	384,000		1,585,000	109.6		283,263	151,536	6			
31 Dec. '56	40.3							Cheraw and Darlington	600,000			400,000	200,000		600,000	40.3							
1 Jan. '56	143.2	21.3						Greenville and Columbia	2,439,789	324,161		1,429,008	1,145,000	345,546	2,919,554	143.2		341,190	125,871				
31 Aug. '56	22.5							Kings Mountain	196,230			200,000			200,000	22.5				5			
31 July '56	32.0							Laurens	543,403			400,000	106,218		575,729	32.0			27,568	8,527			
28 Feb. '56	102.0							North-Eastern	2,011,652			985,743	960,410	108,172	2,067,325	102.0			220,014	96,146			
31 Dec. '56	136.0	100.0			62	59	790	South Carolina	5,517,384	1,103,130	374,000	4,179,475	2,770,463	193,086	7,701,337	242.0		1,501,008	820,511	7			
31 July '56	25.1			41.9				Spartanburg and Union								25.1							
TENNESSEE.																							
31 Dec. '56	30.0		1.8	12	10		14	Edgefield and Kentucky	857,947			333,204	612,000	60,900		30.0		29,845	9,359	7,486			
31 Dec. '56	140.0		8.0	10	10		171	East Tennessee and Georgia	3,637,367			1,289,673	2,020,000	200,000		140.0		318,718	187,466				
31 Dec. '56	130.3		5.1	36	38		576	East Tennessee and Virginia	2,310,033	156,264		536,654	1,902,000	390,407		130.3		150,142	297,806	3			
31 Dec. '56	271.6	16.0	20.0	3.9	9	5	576	Memphis and Charleston	5,444,304	743,729	109,066	2,237,665	2,700,000	443,616		271.6		662,041	1,330,812	778,036			
31 Dec. '56	100.0		30.6	53.8			242	Memphis and Ohio	2,259,267	141,144		670,000	1,361,000	145,000									
31 Dec. '56	59.0		40.1	7	5		119	Memphis, Clarksv. & Louisv.	2,000,000	100,500		298,721	740,000			59.0		69,870	177,256	60,029			
31 Dec. '56	47.4		2.3	4	6		46	Mississippi and Tennessee	1,137,400			798,285	554,949	319,518		47.4		54,175	83,129	44,666			
31 Dec. '56	34.2		7.0	12	2		81	Mississippi Central and Tenn.	892,710	82,908		317,447	632,500	22,369		34.2		30,065	23,808	13,892			
31 Dec. '56	149.7	44.0	7.9	39	17		319	McMinnville and Marchester	533,807	56,816		144,894	406,000	5,000		149.7		117,895	675,832	316,169	8		
31 Dec. '56	45.8		4.2	11.7	5	5	32	Nashville and Chattanooga	3,632,882			2,256,479	1,524,000	21,769		45.8		57,950	75,120	47,670			
31 Dec. '56	30.0		0.6	8.0				Nashville and Northwestern	76,016	76,016		595,922	860,000	204,544		30.0		1,248					
31 Dec. '56	52.0		158.0					Tennessee and Alabama				216,902	413,000	408,477									
31 Dec. '56	56.0		184.0					Winchester and Alabama															
31 Dec. '56	59.0		31.0					TEXAS, (all aided by State).															
31 May '56	75.0		281.0	2	3		67	Buffalo Bayou, Braz. & Col'do	1,132,747			1,270,123	535,000	128,305	1,691,443	75.0		76,988					
31 Dec. '56	25.0		110.0					Galveston, Houston & Henderson															
31 Dec. '56	28.0		756.0					Houston and Brazoria															
31 Dec. '56								Houston and Texas Central															
31 Dec. '56								San Antonio & Mexican Gulf															
31 Dec. '56								Southern Pacific															
VERMONT.																							
31 May '56	90.7		8.6	19.6	7	8	181	Connect. & Passumpsic Rivers	2,345,724	185,421		1,200,000	800,000			90.7		98,856	192,122	82,001			
31 Aug. '56	119.6		13.0	26	18	555	555	Rutland and Burlington	3,989,708	601,509	92,859	2,233,376	3,145,001	1,013,704	6,392,141	119.6		395,762	354,288	81,561			
31 Aug. '56	62.0		3.4	10	5	201	201	Rutland and Washington	1,771,683			950,000			950,000	62.0		175,830	172,836	37,124			
30 Jun. '56	119.0		20.0	42	28	885	885	Vermont Central	8,402,055			5,000,000	3,553,000	1,423,299	10,276,299	169.0		617,262	702,271	115,978			
30 Jun. '56	47.0		2.8					Vermont and Canada	1,350,695			1,350,000			1,350,695	—	—	—	—	—	56		
31 Aug. '56	23.7		0.7					Vermont Valley	516,164	89,612		793,200			1,306,864	23.7		47,324	43,998	10,493			
31 Aug. '56	64.0	10.5						Western Vermont	1,083,500			332,000	700,000		1,083,500	—	—	—	—	—			
VIRGINIA.																							
31 Aug. '56	41.3		122.1					Alex. Loudoun & Hampshire	1,492,194	42,000		1,409,016	36,188	88,131	1,534,194								
30 Sep. '56	75.8		63.5	9	8		216	Manassas Gap	3,262,990	209,901		3,088,500	418,000	292,956	3,939,729	75.8		125,500	65,554				
31 Mar. '56	79.2							Norfolk and Petersburg	2,106,066		10,500	1,511,000	489,110	209,923	2,222,168	79.2							
30 Sep. '56	103.5							Northwestern Virginia	5,322,150			468,605	5,719,229		103.5		345,427	248,004	—	—			
30 Sep. '56	148.7	9.1	4.5	12	10		101	Orange and Alexandria	6,060,824			1,981,167	2,316,879	285,532	6,225,015	97.6		288,297	157,571				
30 Sep. '56	123.3	10.1		19	13		170	Petersburg and Lynchburg	3,040,636	374,996		1,365,300	1,851,500	292,842	4,745,256	133.4		410,106	201,344				
31 Dec. '56	58.0	21.3		14	17		131	Petersburg and Roanoke	988,791	192,940		883,200	127,427	34,344	1,313,057	90.5		310,988	186,085	5			
30 Sep. '56	140.5	1.8		23	18		370	Richmond and Danville	3,588,653			1,981,017	1,126,407	25,163	4,424,671	142.3		263,893	491,674	267,192	65		

AMERICAN RAILROAD BOND LIST.

* signifies that the road is in the hands of receivers. (†) that the company is in default in its interest. "S. F.," Sinking Fund. "var.," that the bonds fall due at different periods.

Description.	Amount.	Interest.	Due.	Price.	Description.	Amount.	Interest.	Due.	Price.	Description.	Amount.	Interest.	Due.	Price.
Alabama and Florida :					Chicago and Milwaukee :					Eaton and Hamilton :				
Mortgage	\$300,000	7	1867		1st Mortgage (convertible)	\$512,000				1st Mortgage	\$757,734	†	var.	
Convert. (guar. by Dir.)	150,000	7	1863		Income	82,000				Erie and North-East :				
Land Mortgage	23,500	7	1869		Real Estate 2d Mortgage	188,894		1868		Exchanged for Buff. and St. L.	149,000			
Alabama and Miss. Rivers :					Chicago and Rock Island :					Evansville and Crawfordville :				
State (Ala.) Loan	123,171				1st Mortgage	1,397,000	7	1870	91					
Mortgage	109,500				Ohio, St. Paul and Fond du Lac :					Florida :				
Alabama and Tenn. Rivers :					1st Mortgage (and 1st Division)	3,000,000	17			Internal Improvement (State)	1,655,000	7	1891	
1st Mortgage convertible	526,000	7	1872		2d Mortgage (1st Land Grant)	3,000,000	18			Free Land, 2d Mortgage	1,500,000	8	1891	
2d Mortgage	228,705	8	1864		Real Estate	350,000	18			Florida and Alabama :				
Albany, Vt. and Canada :					Cincinnati, Hamilton and Dayton :					Internal Improvement (State)		7	1791	
1st Mortgage	600,000	7	1867		1st Mortgage	461,000		1867	93	Free Land, 2d Mortgage		8	1791	
Albany and West Stockbridge :					2d Mortgage	950,000		1880	84	Florida, Atlantic and Gulf Centr.				
Albany City (S. F.)	1,000,000	6	'66-'70		*Cincinnati, Wilm. and Zanesville :					Internal Improvement (State)	300,000	7	1791	
Androscooggin and Kennebec :					1st Mortgage	1,300,000				Free Land, 2d Mortgage	200,000	8	1791	
1st Mortgage (Coupon) '60-'64	1,000,000	6	'62-'64		2d Mortgage	574,000				Internal Improvement (State)				
Stock, convert. (Coupon)	710,000	6	'63-'66		3d Mortgage	158,000				Free Land, 2d Mortgage				
Atlantic and St. Lawrence :					Income	250,500				Fox River Valley :				
Dollar Bonds (Coupon)	988,000	6	1866		Tunnel Right	1,000,000				1st Mortgage	400,000	†		
Sterling Bonds (Coupon)	484,000	6	1878		Cleveland and Mahoning :					2d Mortgage	180,000			
City of Portland Loan (Coup.)	1,500,000	6	'68-'70		1st Mortgage	694,500				Litchfield	52,015	7	1859	
Baltimore and Ohio :					2d Mortgage	469,000				1st Mortgage (S. F.)	1,993,000	7	'62-'63	90
Maryland Sterling	3,000,000	5			3d Mortgage	38,800				2d Mortgage (S. F.)	1,738,000	7	1875	87
Mortgage Coupon	2,500,000	6	1885	83	Clev., Painesville and Ashtabula :					Galveston, Houston and Henderson :				
" "	700,000	6	1880	83	1st Mortgage	564,000	7	1861	98					
" "	1,128,500	6	1875	83	2d Mortgage	303,000	7	1862		*Great Western, Ill. :				
" "	1,000,000	6	1867		Special (Sunbury and Erie)	500,000	7	1874		1st Mortgage (W. Div. 100 m.)	1,000,000	10		
Balt. City Loan	5,000,000	6			Convertible Scrip	300,000	7	1880		1st M. (E.D. 84 m.), 2d M. (W.D.)	1,350,000	7		
Bellefontaine and Indiana :					Cleveland and Pittsburgh :					Old Sang. and Morg. Railroad	41,000			
1st Mortgage convertible	791,000	7	1866	57	1st Mortgage (Main Line)	800,000	7	1860	66	2d Mortgage	323,000			
2d Mortgage	140,000	7	1870		2d Mort. (M. L.) or 1st Extension	1,188,000	7	1873	60	Chattel (Equipment) Mortgage	374,426			
Real Estate (1861, '63, '65)	129,000	7	var.		3d Mort. (M. L.) or 2d Extension	1,165,000	7	1876		Greenville and Columbia :				
Income (S. F.)	199,500	7	1859		4th Mort. (M. L.) or 3d Extension	1,154,000				1st Mortgage, Coupon	1,145,000			
Belvidere Delaware :					Income	118,000				Hannibal and St. Joseph :				
1st Mort. (guar. C. and A.)	1,000,000	6	1877		Dividend Bonds and Scrip	491,825				Missouri State Loan (1st Lien)	3,000,000	6	204-30	
2d Mortgage	445,500	6			Cleveland and Toledo :					Land Security	5,000,000	7	'62-'63	59
Camd. and Amb. R.R. Co.	244,000	6			Junction 1st Mortgage 1st Div.	377,000	7	1867		2d Mortgage (convertible)	757,000	7		
Black River and Utica :					Junction 1st Mortgage 2d Div.	305,000	7	1872	56	Plain	11,000	7		
1st Mortgage	370,000	7	1869		Junction 2d Mortgage	324,000	7	1862		Harrisburg and Lancaster :				
Boston, Concord and Montreal :					Tol., Nor. and Clev. 1st Mort.	622,000	7	1863	75	New Dollar Bonds	459,872	6	1883	93
1st Mortgage	200,000	6	1870		Tol., Nor. and Clev. 2d Mort.	299,000	7	1863		Hartford and New Haven :				
2d Mortgage	300,000	7	1870		Junction Income	61,500	7	1862		1st Mortgage	1,000,000	6	1873	97
3d Mortgage Coupons	150,000	6			C. and T. Income	192,950	7	1863		Hartf'd, Providence and Fishkill :				
4th Mortgage Coupons	200,000	7			C. and T. Income (convertible)	409,900	7	1864						
Sinking Fund	200,000	6			C. and T. Income (convertible)	373,000	7	1864						
Boston and Lowell :					C. and T. Dividend (convert.)	199,735	7	1865						
Mortgage	440,000	6	1873		C. and T. Income (convertible)	129,000	7	1870						
Boston and Worcester :					C. and T. (S. F.) Mortgage	640,000	7	1885	65					
Mortgage (plain)	100,000	6	1860		Junction (Lloyd's)	5,000	7	1862		Houston and Texas Central :				
Mortgage (convertible)	500,000	6	1860		*Cleveland, Zanesville and Cin. :					State (1st Lien) Loan	210,000			
Buffalo and State Line :										Mortgage	125,000	7	1866	
1st Mortgage	500,000	7	1866	90	*Columbus, Piqua and Indiana :					Hudson River :				
Income (½ in '59, ½ in '62)	200,000	7	var.							1st Mortgage	4,000,000	7	'69-'70	102
Unsecured	200,000	7	1864		Columbus and Xenia :					2d Mortgage	1,980,000	7	1860	93
Erie and North-East	149,000	7			1st Mortgage	18,000		1859		3d Mortgage	1,840,000	7	1875	82
Burlington and Missouri :					Dividend (due 1860, '61, '62, '66)	272,700		var.		Convertible	1,002,000	7	1877	77
1st Mort. on 1st Division	500,000				Connecticut River :					Illinois Central :				
Burlington Loan	75,000				Mortgage (due 1862, '63, '78)	253,000	6	var.		Optional Right Scrip	65,000	7	1868	
Cairo and Fulton (Mo.) :					Connectic't and Passump. Rivers :					Construction	12,885,000	7	1875	91
State (Mo.) Loan	650,000	6	'78-'79		1st Mortgage	800,000				Construction	4,115,000	6	1875	91
Camden and Amboy :					2d Mortgage					Free Land	3,000,000	7	1860	104
Mortgage	367,000	6	1864		Cumberland Valley :					Indiana Central :				
Mort. (chgd from Sterlg)	888,000	5	1864		1st Mortgage	118,500		1873		1st Mortgage (convertible)	600,000	7	1866	
Mortgage	800,000	6	1849		2d Mortgage	97,000				2d Mortgage	284,500	10		
Mortgage	1,700,000	6	1875	87	Dauphin and Susquehanna :					Income	281,500	10		
Sterling (\$220,000)	1,008,000	5	1864							Indianapolis and Cincinnati :				
Sterling (\$225,000)	1,080,000	6	1864		Dayton and Michigan :					1st Mortgage	500,000	7	1866	
New Loan (as'd \$337,000)	2,500,000	6	1887							2d Mortgage	400,000	7		75
Unsecured	800,000	6	1863		Dayton and Western :					Real Estate Mortgage	200,000	7	1858	
*Catawissa, Williamsap. and Erie :					1st Mortgage	300,000				Dividend	86,284	7	var.	
1st Mortgage	1,500,000	7	1865	32	2d Mortgage					Income and Domestic	176,000			
2d Mortgage	399,036	7	1886		Delaware :					Indianap., Pittsb. and Cleveland :				
Chattel Mortgage	380,000	10	1871		1st Mortgage					1st Mortgage	656,000			
Cayuga and Susquehanna :					Guaranteed (convertible)	500,000				2d Mortgage	167,000			
1st Mortgage	300,000	7	1865		State Loan	65,000				Income	166,000			
Unsecured	89,000	7	1862		Delaware, Lackawanna and W'n :	170,000				Domestic	34,200			
Central of Georgia :					1st Mortgage	900,000	1871			Jeffersonville :				
Mortgage	106,267	7	1863		1st Mortgage (E. Extension)	1,500,000	1875	98		1st Mortgage	289,000			
Central of New Jersey :					Income (due 1862, '65 and '67)	1,263,170		var.	87	2d Mortgage	392,000			
1st Mortgage	1,500,000	7	var.		Detroit and Milwaukee :					*Kennebec and Portland :				
2d Mortgage	1,500,000	7	1875		1st Mortgage (convertible)	2,500,000	7	1875		1st Mortgage (City and Town)	800,000	6	1870	
Income	375,000	7	var.		2d Mortgage	1,000,000	8	1866		2d Mortgage	250,000	6	1861	
*Central Ohio :					3d Mortgage (convertible)	750,000	10	1863		3d Mortgage	250,000	6	1862	
1st Mortgage	450,000	7	1861	35	4th Mortgage (G. W. R. R.)	500,000	8			*Kentucky Centr. (Cov. and Lex.) :				
2d Mortgage	800,000	7	1864		Dubuque and Pacific :					1st Mortgage	160,000	6		
3d Mortgage	800,000	7	1865		New Construction	800,000	†			2d Mortgage	290,000	7		
3d Mortgage (S. F.)	950,000	7	1885		Dubuque Western :					2d Mortgage (convertible)	1,000,000	7		
4th Mortgage (S. F.)	1,365,800	7	1876		1st Mortgage	344,000	†			3d Mortgage	600,000	7		
Income (1858, '59 and '60)	1,172,200	7	var.		Eastern (Mass.) :					Guaranteed by Covington	200,000	6		
Income (as to Muskingum Co.	100,000	7	1862		Income (due \$75,000 annually)	525,000	6	var.		Cincinnati (exchanged)	100,000	6		
Charleston and Savannah :					2d Mortgage (convertible)	710,000	5	1862		Income (issued 1854)	400,000	10	1859	
1st Mortgage (endorsed)	510,000	6			3d Mortgage (convertible)	445,000	6	1874		Income (issued 1855)	210,000	6	1860	
2d Mortgage	1,000,000	7			1st M. (State) \$75,000 a yr. after '65	500,000	5	var.		Kent'ky Centr. (Lex. and Danv.) :				
Cheshire :					East Tennessee and Georgia :					Keokuk, Ft. D. Moines and Minn. :				
Mort. (1860, '63, '75 and '77)	786,400	7	var.		State, 1st Mortgage	970,000				City of Keokuk, 20 years	400,000	8		
Chicago, Burlington & Quincy :					Endorsed by State of Tennessee	150,000				City of Keokuk, (special tax)	150,000	10		
Consolidated 1st M. o.t.	1,680,000	8	1883		Mortgage (ordinary)	790,688				Lee County, 20 years	150,000	8		
Ohio, and Aur. 1st Mort.	405,000	7	1867		East Tennessee and Virginia :					Keokuk, Mt. Pleasant and Muscat.				
Oh. and Aur. 2d M. (S. F.)	303,000	7	1869		State, 1st Lien	1,602,000				Lee County	150,000	8		
Cent. Mil. Tr. 1st Mort.	400,000	7	1864		Endorsed by State of Tenness.	200,000				City of Keokuk	200,000	8		
Cent. M. T. 2d M. (Conv.)	281,000	8	1868		1st Mortgage (after State)	100,000				Henry and Louisa Company's	50,000	8		
Chicago, Alton and St. Louis :					Redeemable in Stock	66,950				Lehigh Valley :				
1st Mortgage										1st Mortgage	1,500,000	6		
2d Mortgage														
3d Mortgage														

AMERICAN RAILROAD BOND LIST.

* signifies that the road is in the hands of receivers. (†) that the company is in default in its interest. "S. F.," Sinking Fund. "var.," that the bonds fall due at different periods.

Description.	Amount.	Interest.	Due.	Price.	Description.	Amount.	Interest.	Due.	Price.	Description.	Amount.	Interest.	Due.	Price.
La Crosse and Milwaukee:					Montgomery and West Point:					Orange and Alexandria:				
1st Mortgage (Eastern Div.)	\$903,000	†			Alabama State Loan	\$122,622				State Loan	\$400,000			
2d Mortgage (Eastern Div.)	1,000,000	†			Mortgage (due 1860, '63 and '65)	350,000	6	var.		1st Mortgage	1,055,500	6		79
1st Land Grant (Western Div.)	4,000,000	†			Mortgage	450,000	8	1866		2d Mortgage	461,378	5		
2d Land Grant (Western Div.)	353,600	†		9	Muscougee:					Pacific (Mo.):				
3d Mortgage (whole road)	1,700,000	†			1st Mortgage	249,000	7			State (Mo.) Loan	7,000,000	6		
Farm Mortgage	1,087,700	†			Nashville and Chattanooga:					State Loan (S. W. Branch)	2,800,000	6		
Unsecured Bonds	1,785,000	†			Mortgage (State endorsed)	1,500,000				Construction	4,500,000	6		
Lexington and Frankfort:					Chat. and Cleve. Subsc. (endors.)	160,000				Panama:				
Mortgage, due 1864, '69 and '74	130,000	6			Not endorsed	24,000				1st Mortgage Sterling	1,250,000	7	1865	100
Little Miami:					*New Albany and Salem:					2d Mortgage Sterling	1,150,000	7	1872	
Cincinnati Loan	100,000				Crawfordsville	175,000	7			Convertible	27,000	7		
1st Mortgage	138,000	6		85	1st Mortgage	500,000	10			Pennsylvania:				
2d Mortgage	7,000	6			1st Mortgage	2,235,000	6			1st Mortgage (convertible)	4,905,000	6	1888	100
3d Mortgage	981,000	6			New Haven and Hartford:					2d Mortgage	1,928,000	6	1875	
Long Island:										2d Mortgage Sterling	1,539,840	6	1875	
State Loan (S. F.)	100,000	5	1876							State Works Bonds	7,400,000	5		
1st Mortgage	500,000	6	1870							Pennsylvania Coal Company:				
Louisville and Frankfort:					N. Hav., N. Lond. and Ston'gton:					1st Mortgage	600,000	7		
Louisville Loan	174,000				Mortgage	450,000	7			Penobscot and Kennebec:				
1st Mortgage	245,000				Mortgage	200,000	6			Bangor City 1st Mortg. (Coupon)	800,000	6	1874	
Louisville and Nashville:					Extension	100,000	10			2d Mortgage (Coupon)	250,200	6	1875	
State (Tenn.), 1st Lien	300,000	6			New Haven and Northampton:					3d Mortgage (Coupon)	156,600	6	1871	
1st Mortgage	2,000,000				1st Mortgage	500,000		1869		Pensacola and Georgia:				
McMinnville and Manchester:					New Jersey:					State Internal Improvement		7	35 p's	
State (Tenn.)	372,000	6			Company's (various)	711,000		var.	103	Free Land				
Mortgage	24,000	7			New London, Willim. and Palmer:					Feoria and Oquawka:				
Mortgage	10,000	6			1st Mortgage	500,000	7							
Madison and Indianapolis:					2d Mortgage	300,000	6							
State (Ind.) Loan					Income (convertible)	152,000	6							
Mortgage					New London City	100,000	6							
*Marietta and Cincinnati:					N. Orlins, Jackson and Gt. North:									
1st Mortgage (convertible)	2,500,000	7	1868		State (Miss.) Loan	155,000								
2d Mortgage	2,000,000	7			1st Mortgage	3,000,000	8	1886		Petersburg:				
3d Mortgage	1,500,000	7			N. Orlins, Opelous, and Gt. West:					Mortgage (due 1863 to 1872)	103,000	7	var.	
Sterling Income	333,000	4			Louisiana State Loan	621,000				Petersburg and Lynchburg (S. Side):				
Domestic	928,617		59-62		New Orleans City Loan	1,500,000				State (Va.) Loan (S. F.)	800,000	7		
Memphis and Charleston:					1st Mortgage (S. F.)	2,000,000	8	1889		1st Mortgage (1859-70-75)	365,000	6	var.	
State (Tenn.) Loan	1,100,000	6			New York Central:					3d Mortgage (1862-70-75)	378,000	6	var.	
1st Mortgage	1,600,000	7	1880		Albany Loan—Alb. and Sch'dy.	127,000	5	1864	101	Special Mortgage (1865-68)	175,000	6	var.	
Memphis, Clarksville, and Louisv.:					State Loan—Sch'dy and Troy	100,000	6	1867		Last Mortgage (1861 to 1869)	133,500	8	var.	
State (Tenn.) Loan	910,000	6			State Loan—Rochester and Syr.	77,382	5	1861		Phila., Germant'n and Norris'n:				
Memphis and Ohio:					State Loan—Buffalo and Roch.	55,300	6	1865		Consolidated Loan	274,800			
State (Tenn.) Loan	1,340,000	6			State Loan—Roch., L. and N. F.	298,000	7	1861		Loan of 1842	100,000			
Michigan Central:					Stock Subscription	785,000	6	1883	86	Philadelphia and Reading:				
1st Mortgage Sterling	467,489	6			Premium Consolidated Stock	8,000,000	6	1883	86	Mortgage	705,000	6	1860	96
1st Mortgage (convertible)	500,000	8		96	Real Estate	221,000	6	1883		Mortgage	1,572,300	6	1860	93
Unconvertible	258,000	8			New Convertible	3,000,000	7	1864	100	Mortgage (convertible)	886,000	6	1860	93
1st Mortgage (convert.) Dollar	3,331,000	8			*New York and Erie:					Mortgage (convertible)	134,000	6	1860	
1st Mortgage (S. F.), convertible	3,087,000	8		96	1st Mortgage	3,000,000	7	1867	98	Mortgage	3,209,600	6	1870	91
Mich. Southern and N'n Indiana:					2d Mortgage	4,000,000	7	1859	91	Mortgage (convertible)	3,586,500	6	1886	70
Michigan Southern	993,000	17	1857	75	3d Mortgage (convertible)	6,000,000	7	1871	77	Lebanon Valley R.R. (convert.)	1,500,000	7	1884	97
Northern Indiana	985,000	17	1861		4th Mortgage (convertible)	3,729,000	7	1880	58	Real Estate Mortgage	516,450		var.	
Erie and Kalamazoo	300,000	†	1862		5th Mortgage	1,277,000	7	1883	75	Phila., Wilmington and Baltimore:				
Michigan Southern	259,000	†	1863		Unsecured (convertible)	2,618,000	7	1871	29	Mortgage Loan	688,929	6	1860	
Northern Indiana	299,000	†	1863		Unsecured (convertible)	2,443,000	7	1862	29	Mortgage Loan	1,096,500	6	1884	
Jackson Branch	203,000	†	1865		Sinking Fund	2,193,000	7	1875	29	Improvement	119,000	6	1863	
Goshen Air Line	1,335,000	†	1868		New York and Harlem:					Pittsburg and Connellsville:				
Detroit and Toledo	336,000	†	1876		1st Mortgage	3,000,000	7	1873	96	Pittsburg Loan	500,000			
General Mortgage (S. F.)	2,458,000	†	1885		2d Mortgage	1,000,000	7	1864	94	Allegheny Co. Loan	750,000			
2d Mortgage	2,175,000	†	1877	38	3d Mortgage	1,000,000	7	1867	73	Connellsville Loan	100,000			
*Milwaukee and Beloit:					New York and New Haven:					McKeesport Loan	100,000			
1st Mortgage	630,000	8			1st Mortgage	311,000	7	1860		Baltimore Loan	1,000,000			
Milwaukee and Chicago:					1st Mortgage	964,000	6	1866	96	Cumberland Loan	200,000			
1st Mortgage	400,000	8			1st Mortgage	930,000	6	1875		*Pittsburg, Ft. Wayne and Chicago:				
2d Mortgage	200,000	7			N. York, Providence and Boston:					1st Mortgage (O. and P.)	1,000,000		1865	
*Milwaukee and Horicon:					1st Mortgage	331,000	6			2d Mortgage (O. and P.)	750,000		1866	
1st Mortgage	420,000	8			North Carolina:					Income (O. and P.)	1,991,000		1873	
2d Mortgage	600,000	8			State Loan	2,000,000	6			Bridge (O. and P.)	199,500			
Farm Mortgage	150,000	10			State Loan	1,000,000	6			1st Mortgage (O. and L.)	1,000,000		1872	
Milwaukee and Mississippi:					North-Eastern (S. C.):					2d Mortgage (O. and L.)	380,000		1873	
1st Mortgage (convertible)	74,000	10	1861		1st Mortgage	700,000				1st Mortgage (F. W. and Chic.)	1,250,000		1873	
1st Mortgage (convertible)	526,000	8	1862		2d Mortgage	224,500				Real Estate (F. W. and Chic.)	498,000		1874	
1st Mortgage (convertible)	650,000	8	1863		Real Estate	35,910				Mortgage, Consolidated Comp'y	1,229,000		1887	
1st Mortgage (convertible)	1,250,000	8	1877		Northern Central:					Pittsburg and Steubenville:				
South-West Branch	350,000	8	1866		Balt. and Susq. R. R. (Coupons)	150,000	6	1866		Mortgage	800,000	†	1865	
2d Mortgage	600,000	10	1862	35	Md. State Loan (B. and Susq.)	150,000	6			Platte County:				
Construction	500,000	7	1859		York and Cumberland 1st Mort.	175,000	6	1870		State (Mo.) Loan	300,000	6	1870	
3d Mortgage	500,000	8	1862		York and Cumberland 2d Mort.	25,000	6	1871		Potadam and Watertown:				
Mississippi Central:					York and C. guar. by Baltimore	500,000	6	1877		1st Mortgage	800,000	7	1864-74	
1st Mortgage	1,007,363	7			N. C. Contract	292,300	6	1875		Quincy and Chicago:				
Income	91,200	10			Construction	1,903,500	6	1885		1st Mortgage	1,200,000		1878	
Tennessee State	45,000	6			Northern (Ogdensburg):					Racine and Mississippi:				
Mississippi Central and Tenn.:					1st Mortgage	1,500,000	7	1859		1st Mortgage (Eastern Division)	680,000			
State (Tenn.) Loan	529,000	6			2d Mortgage	3,077,000	7	1861		1st Mortgage (West'n Division)	757,000			
Income	95,500				North Missouri:					Coupon	100,000		1862	
Mississippi and Missouri:					State Loan	2,000,000	6			Rensselaer and Saratoga:				
1st Mortgage (convertible)	1,000,000	7			State Loan	2,000,000	6			1st Mortgage		7	1863	
2d Mortgage (S. F.)	400,000	8			State Loan	350,000	6			Richmond and Danville:				
Oakalosa Division	1,425,000	7			North Pennsylvania:					State (Va.) Loan	600,000			
Land Grant	7,000,000	7			Mortgage	2,500,000			68	Guaranteed by State	200,000		1875	96
Mississippi and Tennessee:					Chattel Mortgage	214,500	10			Mortgage (Coupon)	250,000		1860	
Tennessee State Loan	98,000	6	1885		Northern (N. H.):					Registered	150,000		1860	
Mississippi State Loan	202,799	6			Mortgage (due 1860, '64 and '74)	219,500		var.		Richmond, Fred. and Potomac:				
1st Mortgage	171,000	7	1876		Norwich and Worcester:					Sterling (£207,000)	324,900		1866	
Mobile and Ohio:					Mass. State Loan	400,000	6	1877		Convertible	54,500		1875	
City (Mobile) Tax Loan	400,000	6			Mortgage	205,800	6	1860		Dividend Certificates	35,800		1867	
Tennessee State Loan	674,860	6			Mortgage	16,000	7	1860		Dividend Certificates	266,809		1869	
Alabama State Loan	389,410	6			Dividend Scrip and Bonds	102,330	6	var.		Richmond and Petersburg:				
Income	759,415	8	1861		Ohio and Mississippi (O. and Ind.):					Coupon	100,000		1875	
Income	354,723	8	1862		1st Mortgage	2,193,500	†	1858		*Rutland and Burlington:				
Income	375,132	8	1865		2d Mortgage	316,995	†			1st Mortgage	1,800,000			
Income	18,700	8	1867		Construction	4,637,920	†	1858		2d Mortgage	913,500			
Sterling	878,035	6	1883		Income	3,591,185	†	1858		3d Mortgage	426,400			
Mississippi State Loan	200,970	6			Ohio and Mississippi (Ill.):					Sacramento Valley:				
										1st Mortgage	400,000			
										2d Mortgage	365,000			

AMERICAN RAILROAD BOND LIST.

For explanations see preceding pages.

Description.	Amount.	Interest.	Due.	Price.
Sandusky, Dayton and Cincinnati:				
Mortgage	182,000	10	1856	---
Mortgage	997,000	7	1868	---
Mortgage	1,000,000	7	1875	---
Dividend	224,000	6	'00-'02	---
Sandusky, Mansfield and Newark:				
1st Mortgage	1,290,000	7	---	---
Saratoga and Whitehall:				
1st Mortgage	250,000	7	1858	---
1st Mortgage (R. and W. Br.)	100,000	7	1850	---
Unsecured	45,000	7	1858	---
Seaboard and Roanoke:				
1st Mortgage	300,000	---	1860	---
2d Mortgage	75,000	---	1870	---
4th Mortgage	60,000	---	1856	---
South Carolina:				
State Loan	200,000	5	1868	---
Sterling	183,333	6	1863	---
Sterling	2,000,000	5	1866	---
Auditor's	246,500	7	---	---
Southern Mississippi:				
1st Mortgage	500,000	---	---	---
South-Western (Ga.):				
1st Mortgage	631,000	---	1875	---
*Springfield, Mt. Vern. and Pittsb.:				
1st Mortgage	500,000	---	---	---
2d Mortgage	450,000	---	---	---
*Staubenv. and Ind. (P. C. and C.):				
1st Mortgage	1,500,000	---	---	---
2d Mortgage	900,000	---	---	---
*St. Louis, Alton and Chicago:				
1st Mortgage	2,000,000	7	---	---
2d Mortgage	1,535,000	7	---	---
3d Mortgage (Income)	1,000,000	10	---	---
St. Louis and Iron Mountain:				
State (Mo.) Aid	2,501,000	---	---	---
St. Louis City Subscription	500,000	---	---	---
St. Louis County Subscription	1,000,000	---	---	---
Carondelet Subscription	50,000	---	---	---
Sunbury and Erie				
Mortgage	1,000,000	7	---	---
Mortgage	7,000,000	5	---	---
Syracuse, Binghamton and N. Y.:				
	---	---	---	---
Terre Haute, Alton and St. Louis:				
1st Mortgage (convertible)	1,000,000	7	'62-'72	50
2d Mortgage (convertible)	2,000,000	7	'68-'70	85
1st Mortgage (Bel. and Ill.)	517,000	7	1873	---
2d Mortgage (Bel. and Ill.)	494,000	7	1869	---
3d Mortgage (Bel. and Ill.)	605,000	10	1874	---
Tennessee and Alabama:				
State (Tenn.) Loan	814,000	---	---	---
Mortgage	46,000	---	---	---
Terre Haute and Richmond:				
1st Mortgage (convertible)	230,000	7	1866	---
Toledo, Wabash and Western:				
1st M. (L. Er. Wab. and St. Louis)	2,500,000	7	1865	---
2d M. (L. Er. Wab. and St. Louis)	1,000,000	7	1869	---
3d M. (L. Er. Wab. and St. Louis)	1,200,000	7	1861	---
Real Estate (L. Er. W. and St. L.)	200,000	7	1861	---
1st Mortgage (Toledo and Ill.)	800,000	7	1865	---
2d Mortgage (Toledo and Ill.)	800,000	7	1865	---
3d Mortgage (Toledo and Ill.)	600,000	7	1865	---
*Vermont Central:				
1st Mortgage	---	---	---	18
2d Mortgage	---	---	---	---
Virginia Central:				
Mort. guaranteed by State of Va.	100,000	6	1880	82
Mortgage (coupons)	206,000	6	1872	---
Dividend, due 1865, '06 and '75	941,000	6	1884	---
Income (1869 to 1863)	238,346	6	var.	---
	168,382	7	var.	---
Virginia and Tennessee:				
State (Va.) Loan	1,000,000	6	1887	---
1st Mortgage	500,000	6	1872	82
Fractional Mortgage	23,500	6	1868	82
2d or Enlarged	1,000,000	6	1884	80
Halt Works Br. Mort. due '58-'61	203,000	6	var.	---
3d Mortgage (Income)	431,000	6	1865	70
Warren (N. J.):				
1st Mortgage	568,500	---	1875	---
Watertown and Rome:				
Mortgage (new bonds)	800,000	7	1880	---
Western (Mass.):				
Sterling (\$200,000)	4,519,520	5	'68-'71	---
Albany City (Alb'y and W. S.)	1,000,000	6	'06-'76	---
*Western Vermont:				
1st Mortgage	700,000	---	1861	---
Williamsport and Elmira:				
1st Mortgage	1,000,000	7	1890	---
Wilmington and Manchester:				
1st Mortgage	506,000	---	---	---
2d Mortgage	1,000,000	---	---	---
Income	177,000	---	---	---
Wilmington and Weldon:				
Mortgage, payable in England	443,555	---	---	---
Sterling, issued in 1858	144,500	---	---	---
Company's, endorsed by State	203,500	---	---	---
Winchester and Potomac:				
Mortgage	120,000	6	1867	---
York and Cumberland:				
1st Mortgage	225,000	7	---	---

Railroad Reports.
RAILROAD COMPANIES will oblige us by sending us copies of their Reports as soon as they are published.

American Railroad Journal.

Saturday, April 7, 1860.

Michigan Southern Railroad.

A statement just issued by the Michigan Southern Railroad Company, shows the condition of the road on the 1st of March.

The capital stock (common, 61,146 shares; guaranteed, 28,936 shar.) represent'g. \$9,018,200 00
The bonded debt 9,531,000 00
The floating debt (includ. pay-rolls) 1,086,793 60

Total.....\$19,635,993 60

The floating debt in Nov., 1857, was,\$2,415,527 00

The floating debt in March, 1859,

was 1,244,774 00

This debt, proper, March 1, 1860,

was\$685,588 61

(Of which \$408,204 is

secured.)

Add pay rolls and vouchers for last two mos.,

and conting'cies, less

cash in agent's hands. 140,169 38

Making.....\$825,867 89

Add coup. unpaid Feb.

29, 1860..... 261,025 71

Total, March 1, 1860 1,086,793 60

The receipts of the year from all

sources were.....\$1,834,421 00

Operating expenses, including tax-

es.....\$1,105,234 69

Treasurer's office and

Eastern expenses.. 20,693 36

1,125,927 95

Net surplus\$708,493 14

The interest account for the year is

748,556 76

Deficiency\$40,063 62

Add the year's appropriations due

sinking fund..... 32,935 00

Total deficiency.....\$72,998 62

The past year the earnings have

been reduced\$185,603 87

Expenses were reduced..... 116,356 56

Net decrease.....\$68,646 51

Accompanying this statement is a circular,

signed by Mr. Bliss, President of the road, warn-

ing the stockholders against "certain outside par-

ties, professing to be dissatisfied with the course

of the directors, and who have combined to change

the direction by installing themselves and their

friends with control of the road. One object avow-

ed by these parties is to raze the stock and bonds

to a reduced aggregate." To all this, the New

York Times well replies that the effect of the new

movement has been to advance the market value

of the share capital and bonds of the road from

five to seven millions of dollars, showing the public

estimate of the value of the proposed change, com-

pared with the past policy of the company. The

greater part of the advance is undoubtedly due to

a hope that the proposed change will inaugurate

a more successful policy.

Albany Vermont Railroad.

This road, which extends from Albany to Eagle

Bridge, 31½ miles long was purchased on the

4th inst. by several parties, chiefly residents of

Troy, who will forthwith organize a new company.

The price was \$307,000; original cost, \$2,600,000.

An Invention to Save the Oil Used in Lubricating Car Axles.

The immense amount of oil used in lubricating the rolling stock of railroads, makes it an object of no small importance to save it, and it affords a tempting field in which to test the skill of the inventor. The journal box, which is the subject of this article, may not be successful, it has yet to stand the test of thorough trial; but, nevertheless, it may serve to awaken thought and attract attention in other quarters, which will ultimately be of service.

The invention consists of a box in which the shaft is intended to rest; but instead of resting upon a smooth stationary iron surface, the shaft rests upon a number of rollers which entirely encircle it, and as the shaft moves, chase each other around it. The principle is that of moving a heavy body upon a plane by placing it upon rollers instead of attempting to slide it. Between the larger rollers, upon which the weight of the shaft rests, there are intermediate and smaller rollers, which perform the office of keeping the rollers in their proper position. As the axle revolves, all the rollers travel with it in a given direction, and as all roll, and in no case slide, it is maintained that there is no friction, and no oil is necessary for lubrication. The lateral or end thrust of the car axle is received upon three globes, placed in a cup fitted for that purpose, between the "box cap" and the end of the axle. In turning curves the lateral pressure is thus greatly reduced. We understand that this box is being placed upon some of our city railroads for trial.

Illinois Central Railroad.

We published a week or two since a brief synopsis of the report of the directors of this road to the stockholders, for the year 1859. We have now detailed reports of the heads of the several departments with full statements and tabulated results of the operations of the year. These are accompanied also by the reports of the trustees under the mortgages. These various documents are too voluminous for our columns, but we condense from them such portions as are of general interest, and to such an extent as may be necessary to an understanding of the general condition and prospects of this road.

The General Statement is as follows:

	Dr.	
Permanent expenditures.....	\$24,166,782 19	
Interest account.....	\$5,293,170 29	
Less avails of interest fund.....	564,966 81	4,728,203 48
Working stock and supplies.....	429,954 40	
Trustees free land bonds defaced..	550,000 00	
Loss on issue of 970,000 debenture bonds due July 1st, 1861.....	145,262 50	
		\$30,020,202 57
	Cr.	
Share capital paid.....	\$11,117,090 00	
Construction bonds.....	15,387,902 06	
Free land bonds.....	2,079,876 61	
Optional right bonds.....	61,000 00	
Debentures due July 1st, 1861....	683,970 00	
Net floating liabilities.....	675,601 00	
Trustees Peoria and Oquawka Railroad bonds.....	20,000 00	
Free land interest fund.....	44,761 96	
		\$30,020,202 57

Of the 255,000 shares authorized, 175,000 have been issued. There had been paid on these shares up to Jan. 1st, 1860, as follows:

On 22,333 shares, \$100 per share.....	\$2,233,300
3,171 " 70 "	221,970
149,101 " 60 "	8,946,060
391 " 40 "	15,640
4 " 30 "	120
175,000 shares. Total.....	\$11,417,090
Amount carried to interest fund in '51.	300,000

Net balance as shown in general balance above.....\$11,117,090

Construction bond account stands as follows:

\$12,885,000 7 per cent., and \$4,115,000 6 per cent., redeemable 1875.	\$17,000,000 00
Loss on issue.....	1,612,097 94

Net amount as shown in the general statement.....\$15,387,902 06

Of these bonds there had been canceled by proceeds of construction lands and delivered to the trustees up to Jan. 1st, 1859.....\$927,000
Amount canceled during 1859.....391,500

Total canceled to Jan. 1st, 1860..\$1,318,500
Balance.....15,682,500

Free land bond account stands as follows:

Total issue bearing 7 per cent. but redeemable 1860.....	\$3,000,000 00
Deduct loss on issue.....	920,123 39

Net amount as shown in general balance.....\$2,079,876 61

Of these there have been canceled by proceeds of free lands up to Jan. 1st, 1859.....\$123,000
And during the year to 1st Jan. 1860...59,000
And by payments on full paid stock...550,000

Total.....\$732,000
Balance.....2,268,000

The optional right bonds stand as follows:

Total issue.....	\$2,518,000
Amount canceled.....	\$2,515,000
Amount rec'd on full paid st'k.	5,000

Balance outstanding as shown in the general statement.....\$61,000
7 per cent. debentures due July 1st 1861, total issue.....\$970,000
Amount received on full paid stock and \$10 instalment.....336,030

Amount outstanding as shown in general balance.....\$633,970

Floating liabilities are stated as follows:

Bills payable in London.....	\$720,000 00
Bills and accounts payable in N. Y.....	459,067 80
Do. at Chicago office.....	431,011 97

\$1,610,079 77

Offsets by the following assets:

Cash and available assets.....	\$283,699 42
Miscellaneous assets.....	284,569 98
Bills and accts. receivable at Chicago.	366,208 43

Total offsets.....\$934,477 83

Net amount of floating liabilities as shown in the general balance.....\$675,601 94

Permanent expenditures to 1st January, 1859, were.....	\$23,726,240 81
Do. for year 1859.....	440,541 38

Total to 1st Jan'y, 1860.....\$24,166,782 19

as shown in General balance sheet.
Interest account to 1st Jan'y, 1859, \$3,886,733 24
Amount for the year.....1,406,437 05

Total 1st Jan'y, 1860.....\$5,293,170 29
Reduced by net earnings and sales of Interest Fund Lands as shown below.....564,966 81

Balance as shown in Gen'l Statem't..\$4,728,203 48

The working stock on hand consists of the following:

Fuel.....	\$133,269 76
Merchandise.....	24,603 62
Engineering materials.....	80,139 02
Materials at shops.....	190,158 73
Stationery.....	1,783 27

\$429,954 40

The receipts from operation for the year 1859 were:

From Passengers.....	\$811,411 90
" Freight.....	1,107,019 10
" Extra baggage.....	2,746 00
" Mails.....	75,867 49
" Express.....	22,217 30
" Rents.....	5,344 85
" Rent of property.....	65,558 15
" " engines and cars.....	16,880 01
" Storage and dockage.....	336 30
" Freight over Peoria & Oquawka R. R.	7,067 06

Total receipts.....\$2,114,448 98

Operating expenses:—

General expenses.....	\$74,456 80
Maintenance of way.....	437,392 35
Station expenses.....	216,627 95
Maint'nce of machinery.....	274,124 25
Damages.....	22,905 95
Train attendance & supplies.....	141,565 91
Fuel, oil and waste.....	235,019 93
Salaries.....	66,777 56
Sundry items.....	20,708 82

1,489,579 52

Net earnings for year 1859.....\$624,869 46
Deduct charter tax.....132,104 46

Net amount carried to interest fund..\$492,765 00
Add sales of interest fund lands.....72,201 81

Total carried to interest fund as above,\$564,966 81

LAND DEPARTMENT.

The whole grant was for 2,595,000 acres, appropriated as below:

To secure the payment of—	
\$17,000,000 construction bonds ..	2,000,000 acres.
Interest on do.	250,000 "
\$3,000,000 free land bonds	345,000 "
	2,595,000 "

Sales have been made as follows:

Constr'n l'ds, 1859. 21,718.49 acres for	\$243,755 73
Free " " 5,020.06 " "	70,177 54
Interest " " 1,324.89 " "	22,927 80

Total, 1859. 28,063.44 " " \$336,861 07

Add advance interest and interest on notes, and town lot sales.....78,168 82

Sales to Jan'y 1, 1859, less cancellations in 1859.....15,320,807 13

Total sales to 1st Jan'y, 1860.....\$15,735,837 02

Add purchased lots and lands sold, 53,423 28

\$15,789,260 30

Lands remaining 1st January, 1860:—

Construction lands.....	1,118,620.75 acres.
Free " "	150,777.09 "
Interest " "	88,341.61 "

Unsold—total.....1,357,739.45 "

Sold ".....1,237,260.55 "

Total.....2,595,000.00 "

Average receipts per acre for all lands sold, \$12.60.

The report of the company is full and explicit upon all matters of interest to the stockholders; everything is given that can help them to a full understanding of the value of the enterprise. So far it is calculated to give entire satisfaction.

There are some features connected with the history of the road encouraging for the future. Its earnings have fluctuated less than any road entering Chicago, while for the present they will exceed largely that of any previous year. In the annexed statement they are given for a period of five years in comparison with several other Chicago roads.

Year.	Illinois Central.	Galena & Chicago & Rock Isl'd.	Chicago & Burlington & Quincy.
1855.....	1,532,118	2,315,786	1,242,906
1856.....	2,357,203	2,416,343	1,416,304
1857.....	2,293,965	2,315,787	1,886,196
1858.....	1,976,578	1,508,710	1,407,841
1859.....	2,114,448	1,369,144	889,300

The earnings of other Chicago roads for the last year, on the average, were only one-half the highest point they reached in 1856 and 1857. Those of the Illinois Central were only 10 per cent. less than for 1856 the highest point reached by that road. Its earnings for the current year will probably exceed those for 1856 by \$450,000. The gain for three months of the current year has been \$169,096, as follows:

	1859.	1860.	Gain.
January.....	\$132,024	\$187,416	\$55,392
February.....	133,183	186,189	53,006
March.....	152,182	212,880	60,698
	\$417,389	\$586,485	\$169,096

The gain for the three months has been at the rate of 41 per cent. A similar gain for the year will give \$2,980,000 as the gross earnings. This point may not be reached. The per centage of increase, however, should be maintained, as a continuous route by railroad is just opened between Chicago and New Orleans, which must add very largely to the earnings of the Illinois Central over last year. This connection was only formed in February last, and has not been appreciably felt in the earnings for the first quarter of the year.

The early recovery in the earnings of the Central shows the rapid development of the country in its route. It is now working into a large North and South traffic. Its line, with its complement to New Orleans, traverses nearly all the extremes of climate favorable to production, and coincides with the natural routes of commerce. This fact is undoubtedly one of the causes why its traffic has held out so well, while that of most of the Western roads has suffered so severely.

Revenue of Canada.

The public accounts of the Province have been published. They show an increase in the ordinary revenue, and a decrease in the ordinary expenditure, of 1859, as compared with 1858. The figures are:

	1858.	1859.
Expenditure.....	\$8,939,809	\$7,806,804
Revenue.....	5,774,973	7,421,432

It is, of course, unsatisfactory to see that the revenue is not yet less than the expenditure, but the difference in 1859, as compared with 1858, gives ground for satisfaction. The gross expenditure was, in 1859, \$11,008,360. The gross income was \$10,573,411. The total increase of Provincial liabilities, in 1858, was therefore only \$451,979.

Automatic Car Coupling.

The many dangers attending the ordinary method of coupling cars, by stepping in between them and placing the bolt in position by the hand, renders any improvement, which will do away with the necessity of going between the cars very desirable. There have been many contrivances, by which inventors have sought to accomplish this object. Many patents have been granted, nearly all of which have been complicated in construction, unsafe in operation, and always getting out of order. The invention we have in mind was patented by Messrs. Lapham & Burns, May 25th, 1858, and from the simplicity of its construction, and the perfect working of the model which we have inspected, we do not see why it will not prove perfectly successful, when reduced to practical working upon our cars. The whole machinery consists of but three pieces—the common link, a tilting hook, and a crooked weighted lever resting upon a fulcrum. As the link is shoved into the bumper, it strikes the tilting hook, shoving it back and throwing up an arm between the sides of the link, and secures the link firmly against the interior front of the bumper. At this point the crooked weighted lever falls by its own weight, and securely fastens the tilting hook in its position, and the two cars are thus firmly fastened together. When it is desired to uncouple the cars, a chain or rod fastened to the crooked weighted lever is raised, and this relieving the tilting hook, the link is allowed to pull out. This seems to be so simple that it cannot but be successful, and the many lives annually lost will justify the expenses necessary to place them upon all our cars.

The New York Smelting Company.

We take pleasure in noticing the establishment of this Company for the purpose of smelting gold, silver and lead ores, inasmuch as it is the first effort that has been made in this country to divert a large and profitable business hitherto exclusively confined to Europe. There is no reason why the large and valuable product of our vast mineral region should, at additional cost of time, labor and money, be exported to Europe to be converted into metal; and we have no doubt that the facilities offered by this company, will afford an impulse to mining in the United States, which it has as yet been deprived of. Gold ores being principally treated by the amalgamating process, when rich in metal, do not so much require the aid of the smelter; but for silver and lead, when separate or together, or when containing a per centage of gold, the process in use at the Company's Works at Staten Island, is found most efficacious and economical. The ores, we learn, are purchased by assay, or the entire value paid to the proprietor less a charge per pound for smelting. The celebrated Washoe silver ores are being successfully treated in the furnaces, and also lead and silver ores from North Carolina, Vermont, New Hampshire, Newfoundland, New York and Pennsylvania.

It is simply a matter of fact that European smelters are realizing large fortunes in the prosecution of their business; and we can see no reason why the same result should not attend the same enterprise here, when conducted on the same principle, and with equal if not greater facilities, with the added advantage of being nearer the place of production thus saving time, cost of transport-

ation and the onerous charges of the European merchant for wharfage, lightage, insurance and commissions.

Stock and Bond Markets.

The closing cash prices at the New York Stock Exchange for each day of the week ending 4th April, 1860, were as follows:

	Th. 29.	F. 30.	Sat. 31.	M. 2.	Tu. 3.	W. 4.
FEDERAL STOCKS:—						
U. S. 5s, 1874.....	100½	101½	101½	101½	101½	101½
STATE STOCKS:—						
Virginia 6s.....	93½	93½	93½	93½	93½	94
Missouri.....	81½	81½	82½	82½	82½	82½
Indiana 5s.....	90	90	90	90	90	90
Tennessee 6s, 1890.....	90½	90½	90½	90½	90½	90½
California 7s.....	88½	89	89½	89½	89½	89½
Ohio 6s, 1870.....	108	108	108	108	108	108
RAILROAD SHARES:—						
Chicago and Rock Isl. 6s.....	65½	65½	66	67	64	63½
Clev. and Toledo.....	24½	25	25½	24½	25½	25½
Del., Lack. and Western 8s.....	82	82	82	85	85	84
Galena and Chicago.....	61½	61½	62½	62	62½	62½
Hudson River.....	38½	39	41	40½	40	39½
Illinois Central.....	60½	61	61½	63	62½	61½
Michigan Central.....	41½	42½	45	44½	45	45
M. S. and N. I. guard.....	22	22½	22½	21	21	21
M. S. and N. I. 10s.....	11½	11½	11½	10	10½	10½
New York Central.....	74½	76	78	79	79	77½
New York and Erie.....	9½	10	10½	10	12½	12½
N. York and Harlem.....	9½	10	10½	10	10½	10½
N. Y. and H. "pref.".....	35	35½	36	36	35½	36
Panama.....	135	136	135	134	135	135½
Phila. and Reading.....	41½	42	42½	42	42½	42½
MISCELLANEOUS:—						
Del. and Hud. C. Co. 10s.....	95	95½	95½	97	97	97
Cumberland Coal Co. 14.....	14	14½	15	15	15	15½
Pennsylvania Coal Co. 84s.....	84	85	84½	84½	84½	84½
Pacific Mail S. S. Co. 101s.....	104	104	105	107	106	106
Canton.....	20½	21	21	20½	20½	20½
Brooklyn Water W. 101.....	101	101	101	101½	101	101

The following are the closing prices in the

London Market on the 20th March:

United States 5 p. c. red. '74.....	91	to	92
Illinois Central 6 p. c. red. 1875.....	77	to	79
Do. 7 p. c. red. 1875.....	81	to	82
Do. do. Fr. L'd red. '60.....	88	to	90
Do. \$100 shares, \$60 p'd.....	45	to	48
Mich. Cen. 8 per cent. con. '60.....	84	to	90
Do. do. 1869.....	81	to	83
Do. do. 1st mortgage (sinking fund), 1882.....	84	to	86
Do. \$100 shares.....	82	to	87
Michigan S. & N. Indiana 7 per cent. (sinking fund) 1885.....	45	to	50
Do. \$100 shares.....	5	to	10
New York Central, 6 per cent. (sinking fund) 1883.....	85	to	87
Do. 7 per cent. 1864.....	91	to	93
Do. 7 per cent. (sinking f.) 1876.....	91	to	93
Do. \$100 shares.....	66	to	68
New York and Erie 1st mortgage 7 per cent. 1867.....	87	to	89
Do. 2d mortgage, 1869.....	80	to	82
Do. 3d do. 1883, assented.....	66	to	68
Do. Bonds, 1862, '71, '75 do.	28	to	32
Do. Shares, assented.....	9	to	10
Pennsylvania Central B'ds, 1st mort. conv. 6 per cent.	87	to	89
Do. 2d mort. 6 per cent. sterling.....	92	to	94
Do. \$50 shares.....	85	to	90
Phila. and Reading B'ds, 6 p. c., 1860.....	85½	to	87
Do. 6 per cent. 1870.....	73	to	78
Do. \$50 shares.....	15	to	20

The Schuyler Stock.

Mr. Cowdrey, of this city, has issued a circular requesting an authorization from holders of the spurious stock of the New Haven Company to sell it on their account at not less than \$25 per share, payable in cash, or not less than \$27.50 per share, payable in the mortgage bonds of the company at par and interest, or not less than \$33.33 per share, payable in genuine stock—either of the methods of payment to be at the option of said Cowdrey, and the compensation for this service to be one dollar per share, and 10 per cent. of any excess obtained beyond the per centage named, and the payment to depend upon the success of the negotiation.

Journal of Railroad Law.**LIABILITY OF CONSIGNOR TO CARRIER FOR FREIGHT.**

The ever-varying circumstances which, necessarily, attend contracts for the carriage of freight, must, we suppose, always give rise to differences of opinion in honest men's minds as to liability, and lead to more or less litigation. The case, which so far as the principle is concerned, we are about to set forth is one of the many instances of this kind; and we think it will be interesting to our readers, inasmuch as it strongly maintains the security of the carrier for his honestly earned freight.

The plaintiffs, A. & J. W. Jobbitt, ran a canal boat, in 1857, on the canals and lakes of the State of New York, and were common carriers of merchandise. As such carriers, they transported, on their canal boat, some lumber, barley and apples, for the defendants, Goudry & Hurd, from Dresden to Albany. When the plaintiffs received the property on board of their boat, they took a shipping bill, signed by the defendants, which stated that the plaintiffs had received \$180 towards the freight, and that the captain of the boat was to deliver the property to J. Dorr, at Albany, and collect the balance of the freight from him at the time of the delivery. One of the plaintiffs gave the defendants a receipt of the property, which contained a statement similar to the one in the shipping bill.

At the time the plaintiffs delivered the goods, which was on the 30th day of November, 1857, Dorr stated that he had no money to pay the freight, but gave to the plaintiffs his check for \$146.76, which was the balance of the freight due the plaintiffs. He had, however, no funds in the bank at the time to pay it with. At the time Dorr gave his check to the plaintiffs, he took a receipt, signed by the one who transacted the business, showing that the freight was paid. The defendants had previously advanced money to pay the freight to Dorr; but the plaintiffs did not know that fact. The plaintiffs endorsed and transferred Dorr's check on the day it bore date, but it was not paid; and they were sued on it as endorsers, and then paid it, and took it from the holder. They afterwards brought this action to recover the freight for which they had taken Dorr's check.

The action was defended upon two grounds: 1st. That the plaintiffs should not have delivered the property to Dorr, unless he paid them the freight on it. 2d. That the defendants were not liable to pay the freight to the plaintiffs, because they had advanced the same to Dorr, and the plaintiffs had taken his check therefor.

The jury, by direction of the judge, found a verdict in favor of the plaintiffs for \$155.87, which was the amount of the check and interest thereon, subject to the opinion of the court at general term.

The following is the opinion:

BALCOM, J.—It was held in *Shepard vs. Dr. Bernales*, that the usual clause in a bill of lading, engaging the master of the ship to deliver the goods to the consignee or his assignees, *he or they paying freight for the goods*, is introduced for the benefit of the master only, and not for the benefit of the consignor, and that therefore the master is not bound to the consignor to withhold the delivery of the goods, unless the consignee or his assigns pay the freight. And it seems to be established that a clause in a bill of lading, which directs the carrier to collect the freight of the con-

signee of the goods, on delivery, does not, in case of the carrier's neglect to collect of him, discharge the consignor's liability to pay the same. It follows that the delivery of the defendant's goods to Dorr, by the plaintiffs, without requiring him to pay the freight thereon, or the neglect or the failure of the plaintiffs to collect such freight of him, does not affect the defendant's liability to them for it; and that such facts constitute no defense to this action.

The defendant's counsel insists that the taking of Dorr's check, by the plaintiffs, when the goods were delivered under the circumstances disclosed by the evidence was a satisfaction of the plaintiff's claim for the freight, as against the defendants. The check did not operate as a satisfaction of the claim, unless the fair inference from the evidence is that the plaintiffs agreed that it should be received as payment of it. And it seems to me to be very clear that the plaintiffs could not have supposed the check was to operate as a payment of the freight, unless the Union Bank should pay it when presented. It is absurd to say that a creditor regards his demand as paid, when he receives a check for it from his debtor, on a bank. I think in ordinary transactions, the creditor has not the least idea that his demand is paid, though he may receipt it as paid, upon receiving the check of the debtor or of a third person, on a bank, for the same. He cannot be supposed to regard the check as a payment, or as a satisfaction of his demand, when the drawer has no funds in the bank to meet, and the bank refuses to honor it. And in this case I am of opinion the evidence does not warrant the conclusion that the plaintiff received Dorr's check, in satisfaction of their claim against the defendants for the freight, whether it should be paid by the bank or not; but that the fair inference from the evidence is that it was not agreed it should so operate unless the bank should pay it on presentation.

I am of opinion, for the foregoing reasons that the plaintiffs are entitled to judgment on the verdict. Decision accordingly for the plaintiff.

Wrightsville, York and Gettysburg R. R.

This road which extends from Wrightsville, opposite Columbia, to York and a junction with the Northern Central Railroad, is about 13 miles long. It is chiefly owned and operated by the Northern Central Railroad Company, and during the past year has entered into a new contract for certain purposes which are detailed in the following summary, the contract to be valid from 1st Oct., 1859, to 1st Oct., 1864. The Northern Central Company agrees to receive all the revenues, and pay all expenses, including \$100 each to the President, Secretary and Treasurer of the company, and all outstanding bonds and floating debt, and a dividend of \$1 per share on the capital stock; to charge for the use of cars and locomotives 40 cents per mile run by locomotives; to invest the net revenue, not exceeding \$6,341—first, in paying the floating debt, and secondly, in paying the bonds, and whenever the amount to be appropriated to the Sinking Fund shall exceed the amount of dividend, say \$3,641, being one dollar per share, then the excess shall be appropriated thus: one half to be added to the dividend, and the other half to the sinking fund. The Wrightsville, York and Gettysburg Company agrees to the canceling of all the bonds now invested in the sinking fund,

and to cancel annually all future investments for sinking funds, and should the payments (as above) exceed the gross receipts, any deficiency shall be a charge against and must be first deducted from the amount to be invested in the Sinking Fund in succeeding annual settlements.

The revenue account under the contract dated 15th September, 1859, from 1st October to 31st December was as follows:

Receipts—	
From Passengers.....	\$2,552
" Freight.....	3,485
" Mail.....	162
	\$6,199
Balance carried down.....	477
	\$6,676

Expenses—	
For 6,584 miles run by trains at 40c.....	\$2,634
Repairs of road.....	3,967
Salaries.....	75
	\$6,676

Balance brought down..... \$477
The receipts for the whole year 1859 amounted to \$26,700, being \$1,246 less than previous year.

The ledger account stood thus on the 30th September, 1859:

Cost of road and real estate.....	\$400,046
Share capital (6,341 shares).....	\$317,050
Coupon bonds issued for debt to the late Balt. & Susq. R. R. Co. redeemable 15th Nov., 1867, interest quarterly....	52,000
Debt due Northern Central R. R. Co.....	30,996
	\$400,046

In accordance with the contract of Sept., 1859, the bonds of the company amounting to \$48,000 invested in the Sinking Fund were canceled and destroyed, and the uninvested balance of \$517 due the sinking fund credited to the Company's debt.

Of the total capital of the company, 3,173 shares, or \$125,765, are held by the Northern Central Company, and also all the debt, together amounting to \$208,761.

Covington and Cincinnati Bridge.

The new Board of Directors chosen by the stockholders, at their annual meeting, held in this city on the 5th ult., consisting of John W. Finnell, President, Miles Greenwood, R. B. Bowler and Rufus King, of Cincinnati, and N. B. Stevens, Amos Shinkle and Jesse Wilcox, of Covington, have completed their organization, and are determined to go energetically to work to secure, if possible, a speedy resumption of the work.

The Board presents the following statement:

Capital Stock.....	\$413,000 00
Amount paid in cash, material and labor on subscription..	\$259,863 03
Balance due, payable in cash.....	61,633 56
Due payable in material and labor.....	50,192 20
13 Covington City bonds.....	13,000 00
Due from City of Covington.....	28,612 21
	413,000 00

There has been already expended on the work about \$300,000, and it will require, to complete the bridge, in addition to the present available means of the company, about \$500,000. Of this sum, it is confidently believed at least one-fifth can be obtained in subscriptions of labor and materials, in contracts yet to be made. If this expectation shall be realized, there remains but \$400,000 to be provided.

The work already done, has been accomplished under the most favorable circumstances. The foundations were laid during the extreme low wa-

ter in the fall of 1857. There has not been so favorable a season for such work for the past fifteen years.

The same work, if it could have been built at all, before or after the summer and fall of 1857, would have cost more than twice the sum paid by the company.

But all these advantages will be lost to the early friends and stockholders, if they delay too long the completion of the work. The interest on the sum already expended is lost, hence those who have put their money in the adventure are doubly interested in pressing forward the work. The value of real estate in the city of Covington would be enhanced by the bridge, greatly more than the sum now required to complete it.—*Cin. Enquirer*

Railroad Earnings.

Comparative statement of earnings and expenses, for the month of February, 1859 and 1860, of the Buffalo and State Line Railroad:

EARNINGS.		1859.	1860.
Passengers.....	\$22,322 56	\$23,146 51	
Freight.....	44,632 33	42,899 64	
Other sources.....	1,276 75	1,440 82	
Totals.....	\$68,231 64	\$67,486 97	
Decrease.....		\$744 67	

EXPENSES.		1859.	1860.
Maintaining road.....	\$6,860 95	\$8,013 95	
Repairs of machinery.....	4,006 00	5,266 89	
Operating.....	15,089 66	15,048 43	
Total.....	\$25,956 61	\$28,329 21	

The earnings of the Chicago and Rock Island Railroad for March, 1860, were..... \$76,241
March, 1859..... 64,774

Increase..... \$11,467
The earnings of the Galena and Chicago Railroad for March, 1860, were..... \$78,967
March, 1859..... 92,920

Decrease..... \$13,953
The earnings of the Buffalo, New York and Erie Railroad for March were:

	1859.	1860.
Passengers.....	\$11,662 62	\$9,737 13
Freight.....	35,654 70	37,588 58
Other sources.....	1,686 86	1,686 86
Totals.....	\$49,004 18	\$49,012 53

The receipts of the Marietta and Cincinnati Railroad for January, 1860, were..... \$30,725 77
January, 1859..... 29,262 60

Increase..... \$1,463 17
Expenses of operating road, maintaining track, etc., Jan., 1860..... \$34,245 76
Jan., 1859..... 27,301 68

Increase..... \$6,944 08
The earnings of the Hudson River Railroad for March, 1860, were..... \$161,047 88
March, 1859..... 175,773 23

Decrease..... \$14,725 25
The earnings of the road for the past six months have been..... \$1,141,817 40
Corresponding period of previous y. 1,034,380 82

Increase..... \$106,436 58
The earnings of the Cleveland and Toledo Railroad in March, 1860, were..... \$85,802
March, 1859..... 75,330

Increase..... \$10,472
The earnings of the Illinois Central Railroad in March, 1860, were..... \$212,880 84
March, 1859..... 152,162 69

Increase..... \$60,718 15

The earnings of the New York and New Haven Railroad for March, 1860, were \$76,224
March, 1859 73,908

Increase \$3,321

The earnings and expenses of the Memphis and Charleston Railroad, in February, were as follows:

Total receipts \$159,462 58
Total expenses 68,980 49

Net receipts \$90,482 09

The following are the February earnings of the Panama Railroad since its completion:—Feb'y, 1855, \$52,000; 1856, \$107,100; 1857, \$112,300; 1858, \$108,770; 1859, \$92,180; and 1860, \$163,500.

Cincinnati Stock Sales. By KIRK & CHEEVER.

For the week ending April 2, 1860.

BONDS.	Per cent.	
Little Miami, 1st Mort.	6s.....85	and int.
Covington and Lexington, 1st Mortgage.	7s.....66	"
" " " "	7s.....66	"
" " " "	10s.....10	"
Ohio & Miss., E. D., Construction	7s.....15	"
Cin., Ham. and Dayton, 2d Mortgage	7s.....85	and int.
" " " " 1st	7s.....	"
Indianap. & Cincinnati, do.	7s.....75	"
STOCKS.		
Cincinnati, Hamilton & Dayton	Ex Div. 70	
Columbus and Xenia84	
Indianapolis & Cincinnati36	
Little Miami84½	

La Crosse and Milwaukee Railroad.

The receipts of this road for the quarter ending February 23, 1860, were \$110,892.49; and the disbursements for ordinary purposes, \$77,118.11. In addition to which there were paid on account of November expenses, \$20,659.10; for incumbrances on depot grounds, buildings, etc., \$7,113.74; for equipment, \$11,115.45; for bridge over Portage Canal, \$3,275.85; for right of way, etc., \$2,418.50—making a total of \$44,582.64 for other than current operating expenses. In making these payments, \$10,803.26 have been taken from the March receipts, not yet made up. The proportion of the receipts belonging to the Canal Grant division, included in the above, are \$31,995.28; and of the disbursements, \$43,889.03.

Missouri.

The Governor has vetoed the Railroad Bill recently passed by the Legislature of this State, and has called another session of the Legislature for the purpose of removing his objections. His action has caused a great deal of feeling in the State. It is of the greatest importance that the difference existing between the two should be reconciled, as all the unfinished roads of the State are at a standstill.

To Railroad Contractors.

SEALED PROPOSALS for the Graduation, Bridging, Ballasting and Track-laying of sixteen miles of the Junction and Breakwater Railroad from Milford to Georgetown, will be received by the undersigned until Tuesday, the 1st day of May next, upon which day the proposals will be opened and the lettings declared.

All necessary information can be obtained at the Engineer's Office in this place.

Milford, Delaware, April 2nd, 1860.

JOHN W. HOUSTON,
President of the Company,
T. F. TILGHMAN, Chief Eng.

RAILROAD IRON.

THE undersigned, Agents for the Manufacturers, are prepared to contract to deliver, free on board at shipping ports in England, or at ports of discharge in the United States, RAILS OF SUPERIOR QUALITY, and of weight or pattern as may be required.

VOSE, LIVINGSTON & CO.,
9 South William st.

New York, Aug. 1, 1858.

NEW YORK SMELTING COMPANY,

WORKS AT STATEN ISLAND, N. Y.
OFFICE, 51 EXCHANGE PLACE, N. Y.

Gold, Silver and Lead Ores.

THIS COMPANY ARE PREPARED TO PURCHASE OR RECEIVE ON CONSIGNMENT the above Ores on as favorable terms as can be obtained in this country or in Europe.

W. H. McVICKAR, President.

S. RUST'S PATENT (applied for) OIL CANS.

This improvement consists in a chamber or inner wall, on the top of the body of the Can, to catch and save the drippings that come from the tube after using. The chamber is made large enough to save all drippings that will be accumulated while using a can full of oil, and when the tube is unscrewed to refill the Can, the oil therein collected will run back, keeping the Can always clean on the outside, as well as saving the drippings which are always

waste, when using the common cans, by running down the outside & keeping them constantly covered with oil, which difficulty this Can entirely obviates.

Price from \$1.25 to \$3.50 per doz., according to size. Attention is invited to the Sewing Machine Can, which is got up in a cheap and handsome manner. At the common Oil Cans, Door Escutcheons, Drops, Key Bases, etc., at the lowest prices.



Manufactured by S. RUST, Jr.,
162 West 28th Street, New York.

The only Can that will always keep clean while in use.

CAST STEEL,

Of First Quality and Warranted.

BAR, TOOL, DRILL, AND DIE STEEL.
LOCOMOTIVE, CAR AND CARRIAGE CAST STEEL.
CAR SPRING STEEL,
Far superior to the ordinary kind.
FROG PLATES, POINTS.

Saw, File, Cutlery, Rake, Hoe, Axe and Plough Steel. Gun Metal. Wire and Machinery Steel.
ORDERS FILLED PROMPTLY AND AT LOW PRICES.

SALTUS & CO.,
45 Cliff st., New York.

STEEL, FILES, ETC.

R. GROVES & SONS,
SHEFFIELD, ENGLAND,
MANUFACTURERS of warranted Cast Steel, superior quality, for Tools, Machinery, and Engineering purposes. Single and Double Shear, Blister, German Spring and Sheet Steel of every description—also, Cast Steel Files, of high reputation, especially adapted for the use of Machinists, and Saws and Edge Tools of all kinds.
A stock of the above goods constantly on hand.

CORPORATE MARK
USE

CHAS. CONGREVE & SON, Agents,
13 Cliff street, N. Y.

RAILROAD IRON.

THE undersigned, agents for the manufacturers, are prepared to make CONTRACTS FOR RAILS delivered free on board at ports in England, or on ship at ports in the United States.

M. K. JESUP & COMPANY,
44 Exchange Place.

New York, 1st June, 1858.

MOSES BIGELOW & CO., MANUFACTURERS OF ALL KINDS OF COPAL VARNISHES,

At 310 & 312 Mulberry st.,

Adjoining the Chestnut st. Depot.

NEWARK, N. J.

HAVING constantly on hand a very large stock of superior VARNISHES, would respectfully give notice to buyers that they can, at all times, be supplied with the best goods in their line, on the most favorable terms, and at the shortest possible notice.

The attention of RAILROAD COMPANIES and CARRIAGE MANUFACTURERS is especially invited to their ELASTIC or FINISHING, WEARING DRY and LIGHT CARRIAGE VARNISH, which, for free wearing brilliancy of lustre and fine wearing qualities, are surpassed by any manufactured in the Union.

Cabinet, Piano, and other Manufacturers IN WOOD, TIN AND IRON,

can be supplied with QUICK-DRYING VARNISH of superior quality, thoroughly adapted to their various uses.

DRUGGISTS and DEALERS in the article may rely upon goods adapted to their trade, and will be dealt with in the most liberal manner.

Goods delivered and shipped in New York FREE OF CHARGE.

THE IMPERIAL LUBRICATING OIL, MANUFACTURED BY J. C. HULL & SONS,

(Formerly W. HULL & SON.)

Nos. 108, 110, 112, 114, 116 & 118 Cliff St.,

NEW YORK,

For Railroads,
Machine Shops,
Steamships,
Mills, etc.

THIS OIL having been before the public for a long time, and having been extensively used in different parts of the country, and on each occasion meeting with unqualified approval, renders the manufacturers confident when making the following claims:—

1st. Its first cost is much less than that of any Oil in use, of known merit or acknowledged worth.

2nd. It will not in any way gum or clog up any journal or bearing, all the gum in the Oil being entirely decomposed.

3rd. It will keep all journals and bearings cool, clean and bright as new, thus not only saving wear and tear, but saving also no inconsiderable amount of motive power.

4th. It is fully as durable as any Oil in the market, and consumers are invited to make their experiments on such journals as are inclined to heat up.

5th. It is sweet and clean, and entirely free from all odor or unpleasant smell.

6th. It will remain limpid at as low a temperature as sperm.

CERTIFICATES from a large number of Railroad and Steamboat officers, also, prominent Manufacturers and Machine Builders, can be seen by application as above.

OIL! OIL!

PEASE'S

IMPROVED ENGINE and SIGNAL OIL,

FOR
RAILROADS, STEAMERS, PROPELLERS,
AND FOR EVERY CLASS OF

MACHINERY AND BURNING.

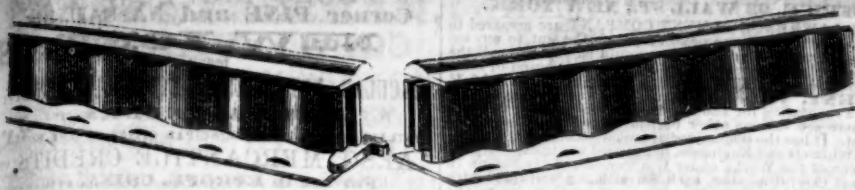
PRACTICAL TESTS, by Engineers and Machinists, of Thousands of Gallons, prove this Oil to be superior for burning, and TWENTY-FIVE per cent. more durable than Sperm Oil, for Lubricating, and the only Oil that is in all cases reliable, that will keep bearings cool, and

WILL NOT GUM.

In no case has it failed to meet the approval of the consumer. The SCIENTIFIC AMERICAN and MANUFACTURER'S JOURNAL, after testing this Oil, pronounce it superior to any other for Lubricating—For sale ONLY by the Inventor

F. S. PEASE, 61 Main st., BUFFALO, N. Y.
Reliable orders filled for any part of the United States or Europe.

Russell's Patent Corrugated Cast Rail for City Roads.



Address J. E. RUSSELL, Patentee, or RUSSELL, BEACH & CO., Iron Foundry, BROOKLYN, E. D.

STEELE & CO., PATENT FEATHER BRUSH MANUFACTURERS,

Have removed from 365 Pearl and 53 Nassau Sts. to the brown stone building
No. 3 Park Row (opp. Astor House) New York.

EXTRA CAR DUSTERS made very strong and full of selected ostrich feathers. PATENT CAR AND WINDOW WASHERS, combining the utility of the sponge and bristle brush, but much more durable and economical.

Possessing all the advantages that extensive manufacturing facilities and an experience of a quarter of a century can confer, we are enabled to offer a superior article of Dusters at as low a scale of prices as such goods can possibly be produced. We manufacture over 300 varieties of Feather Brushes adapted to the use of stores, dwellings, hotels, steamboats, stables, railroads, etc., comprising Furniture Dusters, Carriage Dusters, Cornice Dusters, Piano Dusters, Picture Dusters, Window Washers, Wall and Floor Brushes, Peacock and Ostrich Fly Brushes, Parlor and Library Dusters and various other styles, all of the high degree of excellence, durability and perfection of finish that has characterized Steele's Patent Ostrich Feather Dusters for the past 25 years.



IRON BOILER FLUES.

LAP-WELDED BOILER FLUES,
1 1/2 to 7 inches outside diameter, cut to definite length, 2 to 20 feet as required.

Wrought Iron Welded Tubes,
from 1/2 to 3 inches bore, with Screw and Socket Connections.
Fits L's Stops, Valves, Flanges, etc., etc.

MANUFACTURED AND FOR SALE BY
MORRIS, TASKER & CO.,
PASCAL IRON WORKS.

Established 1821.

WAREHOUSE-209 SOUTH THIRD STREET,
PHILADELPHIA.

STEPHEN MORRIS,
THOS. T. TASKER, JR.

CHAS. WHEELER, JR.,
STEPHEN P. M. TASKER.

LACKAWANNA IRON AND COAL COMPANY, SCRANTON, LUZERNE CO., PA.

By the completion of the DELAWARE, LACKAWANNA AND WESTERN RAILROAD, this Company are enabled to obtain the MAGNETIC ORES from the most celebrated mines in New Jersey, which used in combination with their native ores, produce a quality of iron not surpassed.

These Works have been greatly enlarged the past year, and are therefore prepared to execute orders promptly for RAILROAD IRON of any pattern and weight, Car Axles, Spikes, and Merchant Iron. They have on hand patterns for T Rails, of the following weights per lineal yard, viz—25, 30, 36, 40, 45, 50, 60, 62, and 75 lbs. Samples of RAILS and MERCHANT IRON may be seen at the office of the Company, 46 Exchange Place, N. Y.

Address
J. H. SCRANTON, President,
Scranton, Pa.
or **DAVID S. DODGE, Treasurer,**
46 Exchange Place,
NEW YORK.

RAILROAD IRON.

ENGLISH and AMERICAN Railroad Iron for delivery in New York and other markets in the United States and England. For sale by

S. W. HOPKINS, Broker,
72 Beaver st., New York.

RAILROAD IRON.

THE subscribers, Agents for the Manufacturers, are prepared to contract for the delivery of RAILROAD IRON at any port in the United States or Canada, or at a shipping port in Wales.

WAINWRIGHT & TAPPAN,
Boston, June, 1851. 29 Central Wharf.

RAILROAD IRON.

CONTRACTS for RAILS, at a fixed price or on commission, delivered at an English port, or at a port in the United States, will be made by the undersigned.

THEODORE DEHON,
10 Wall st., near Broadway, N. Y.
300 tons T Rails on hand, 54 to 57 lbs per lineal yard.

MORRIS, WHEELER & CO.,

SUCCESSORS TO

MORRIS & JONES & CO.,
IRON MERCHANTS,
MARKET AND SIXTEENTH STREETS,
PHILADELPHIA.

IRON AND STEEL
IN ALL THEIR VARIETIES.

BOILER PLATE, CAR AXLES,
BOILER RIVETS, RAILROAD IRON,
CUT NAILS and SPIKES, PIG IRON, etc.

Having the selling agency of a number of the Rolling Mills, Furnaces and Forges in this State, orders for any description of IRON can be executed.

RAILROAD IRON. WOOD, MORRELL & CO.,

HAVING leased the extensive Works of the CAMBRIA IRON COMPANY, situated at JOHNSTOWN, Cambria Co., Penna., and purchased all their real estate, are now prepared to execute, at short notice, orders for RAILS of any required pattern or weight, on the most liberal terms.

PHILADELPHIA NORTH PENNA. R. R. BUILDING,
OFFICE, No. 407 Walnut st.

RAILROAD IRON.

THE undersigned, Agents for leading Manufacturers in STAFFORDSHIRE and WALES, are prepared to contract for delivery on board ship at LIVERPOOL, or WELSH port.

C. CONGREVE & SON,
13 CHURCH ST., N. Y.

RAILROAD IRON AND COMMON BARS.

THE undersigned, sole Agents to Messrs. GUEST & CO., the proprietors of the Down's Iron Works, near Cardiff, South Wales, are duly authorized to contract for the sale of their G. L. Railroad Iron, and Common Bars, on most advantageous terms.

B. & J. MAKIN, 70 Broad st.

RAILROAD IRON.

THE subscriber is prepared to enter into CONTRACTS FOR RAILS delivered at an English port or at a port in the United States.

JAMES TINKER,
54 Exchange Place,
NEW YORK.

Eric Rails, 57 to 58 lbs. per yard, on hand in NEW YORK and NEW ORLEANS.

RAILROAD IRON.

THE UNDERSIGNED are prepared to contract for the sale of

RAILROAD IRON

on advantageous terms, delivered at ports of England, Wales, or the United States.

MEAD & BELL,
17 William Street, N. Y.

MITCHELL & WORCESTER, GENERAL COMMISSION MERCHANTS,

Agents for the sale of



**SAFES
AND LOCKS,
RAILWAY SUPPLIES,
FORGINGS,
NAILS, TACKS, ETC.,**

No. 146 Chambers st.,
NEW YORK.

HOYT, BADGER & DILLON,

Late S. HOYT & CO.,

MANUFACTURERS AND IMPORTERS OF

**FINE
WATCHES, JEWELRY,
AND
SILVER WARE.**

266 PEARL and 38 FULTON STS.,
U. S. HOTEL, NEW YORK.

INSTRUMENTS.

H. W. Hunter,

MANUFACTURER of Railroad, Surveying, and Drawing Instruments, etc., etc, 169 William st., New York.
N. B.—Bronze and Silver Medals awarded for the Best Railroad and Surveying Instruments, 1856 and 1857.

E. BROWN'S SON,
MANUFACTURER OF
TRANSITS, LEVELS,
RODS, CHAINS, ETC.
No. 27 FULTON SLIP, N. Y.

ENGINEERS' AND SURVEYORS'
INSTRUMENTS, MADE BY
Edmund Draper,
Surviving partner of
STANCLIFFE & DRAPER,



No. 22 Pear Street,
near Third St.,
below Walnut,
PHILADELPHIA.

J. T. Hobby, (formerly SAWYER & HOBBY,)

MATHEMATICAL Instrument Maker, at the old stand,
156 Water st. New York. 1783

James Prentice,
66 NASSAU St., N. Y., Manufacturer of Mathematical Instruments of every description. Orders promptly filled.

Hugo Harttman,
MANUFACTURER of Engineers' and Surveyors' Instruments, 223 Dock st., PHILADELPHIA.

W. & L. E. Gurley, Troy, N. Y.,
MANUFACTURERS of Engineers' and Surveyors' Instruments. Descriptive and priced catalogue gratis

Knox & Shain,
MANUFACTURERS of Engineering & Telegraphic Instruments, 46 1/2 Walnut st., Phila. (Two premiums awarded.)

F. W. & R. King,
MANUFACTURERS of Engineers' Levels, Transits, and Drawing Instruments, No. 226 Baltimore st., BALTIMORE, Md

Richard Patten,
MANUFACTURER of Mathematical Instruments to the U. S. Government, No. 58 Baltimore st., BALTIMORE, Md.

James W. Queen & Co., Philad.,
MANUFACTURERS of Engineers' Levels, Transits, Chains, Tapes, &c. Priced catalogues by mail gratis.

Wm. J. Young
HAS removed his Engineering and Surveying Instrument Manufactory to No. 45 North Seventh Street, Philadelphia.

H. SAWYER
(of the late firm of SAWYER & HOBBY),
MANUFACTURER of Transits and Levels, has removed to Union Place, near Washington Av. Yorkers, N. Y.

RAILROAD IRON. THE RENSSELAER IRON COMPANY, TROY, N. Y.,

OFFER Rails of their own manufacture deliverable as may be desired by purchasers.

OLD RAILS

received in exchange for new, or for re-manufacturing.

JOHN A. GRISWOLD, Agent,
TROY, N. Y.

New York Agency:
BUSSING, CROCKER & DODGE,
22 CHURCH ST.

CEMENTS.

HUDSON RIVER CEMENT COMPANY.

THIS Company is now prepared to furnish at the shortest notice, on the most favorable terms, **HYDRAULIC ROSENDALE CEMENT, NOVA SCOTIA CALCINED PLASTER, FARMERS' PLASTER, and MARBLE DUST**, all of full weight, and of a fine and superior quality.

This Cement is manufactured by the Company from a superior selected quality of Cement Stone, from its extensive Quarries at Rosendale, Ulster Co., N. Y., and has been very extensively used during the past eight years in the construction of **RESERVOIRS, CISTERNS, TANKS, BATHS, CELLARS, VAULTS, etc.**, and for a variety of purposes "under water," such as **DOCKS, BRIDGES, MILL-DAMS, FOUNDATIONS and BREAKWATERS**. It is largely used for any sort of **dry concrete and Underwater Works**. Where strong work is needed, or dampness to be excluded, this Cement is unrivalled. It has the unqualified approbation of the most eminent **ARCHITECTS, ENGINEERS, CONTRACTORS and BUILDERS in AMERICA**, being used in most every department of the **Works under Government**.

It is put up, for shipping purposes, in tight, well-made, and thoroughly papered barrels—each barrel containing **300 lbs.** of Cement—and shipped direct from the works at **JERSEY CITY, N. J.**, (opposite the City of New York), at all seasons of the year, thus avoiding all unnecessary handling.

The better condition, therefore, in which its articles are received by purchasers makes it an object for them to purchase its **Hydraulic Rosendale Cement, Calcined Plaster, Farmers' Plaster, and Marble Dust**; and which, if used by persons of experience, never fail to give entire satisfaction. Orders, however extensive they may be, are respectfully solicited from **Dealers, Contractors, Railroad Companies, Masons and others**.

Please address, **Hudson River Cement Company, Jersey City, N. J.**, or **J. H. BUTTS, Secretary**, N. B.—Freights obtained by good vessels on the best terms, and Insurance when required.

DELAFIELD & BAXTER'S, Late OGDEN & DELAFIELD, ROSENDALE CEMENT.

WE are prepared to enter into arrangements for supplying our CEMENT for public works, or other purposes. We warrant it equal in every respect to any manufactured in this country. It attains a great degree of hardness, sets immediately under water, and is a superior article for masonry coming in contact with water, or requiring great strength.

For sale in tight barrels, well papered, on application at their office, by **DELAFIELD & BAXTER, 104 Wall st.**

The above CEMENT is used in most of the fortifications building by government.

ROSENDALE HYDRAULIC CEMENT.

ROSENDALE AND KINGSTON CEMENT CO. Manufactory at Kingston, N. Y., on the West Bank of the Hudson River. Office 45 Pine st., New York City.
E. M. BRIGHAM, Sec'y.

THE LAWRENCEVILLE MANUF'G CEMENT COMPANY, OFFICE 96 WALL ST., NEW YORK.

THIS Company manufactures **ROSENDALE HYDRAULIC CEMENT** of a superior and uniform quality, and are constantly receiving it fresh from their Works at Rosendale. Particular attention paid to grinding fine, and packing in superior casks. We warrant it to set under water, and attain a hardness excelled by no Cement manufactured. It has met the approval of Government, and we are at present supplying the fortification now in course of erection, together with Water Works and Public Buildings.

For sale upon favorable terms by addressing,
WM. N. BEACH, President.
CHAS. E. LAWRENCE, Sec'y.

Rosendale Hydraulic Cement.

THE NEWARK AND ROSENDALE CEMENT COMPANY are now receiving fresh from the Mills their approved **ROSENDALE CEMENT**, warranted pure and free from quick lime, and which has given such general satisfaction in the various government and other public works in which it has been used. Purchasers and shippers should be careful to get the genuine **ROSENDALE CEMENT**, branded "NEWARK AND ROSENDALE," "H. WILDE." This Cement does not swell and burst the hoops when stored in warm climates. It is packed in tight kiln dried barrels, and is especially adapted for safe shipping on long voyages. Terms reasonable, which may be known by addressing,

JOHN H. STEPHENS, President, Newark, N. J., or
HENRY WILDE, Secretary, 90 Wall st., N. Y.

HOFFMAN'S ROSENDALE CEMENT, OFFICE, 93 WALL ST., NEW YORK.

THE LAWRENCE CEMENT COMPANY are prepared to receive and execute orders for their Cement, to any extent that may be required. They would particularly call the attention of purchasers to the distinguishing brand of their manufacture, viz.: **HOFFMAN'S ROSENDALE CEMENT**. This seems to be necessary, as they have established a reputation for the superior quality of their Cement, and there are various other brands offered, as "Rosendale" Cement. It has the unqualified approbation of the most eminent Architects and Engineers, being used in almost every department of the Works under Government. It is put up in the most careful manner, each barrel being well lined with paper, and will be delivered on ship board, in this city, on the most favorable terms. Particular attention given to shipping orders, and Freight obtained on the best terms.

M. W. WOODWARD, Secretary.

**GUTTA PERCHA
CEMENT ROOFING.**

**THE
Cheapest
and most
DURABLE
ROOFING
IN USE.**

Sent to any part
of the country
with directions
for application.

SPECIMENS and references can be seen, and any desired information obtained on application, by letter or in person, at our office,
510 BROADWAY, N. Y.
(Opposite the St. Nicholas Hotel).
JOHNS & CROSLY.

FINANCIAL.

BANKING and COMMISSION AGENCY.

A. G. JAUDON, No. 54 Wall street, NEW YORK.

AGENCIES of a financial nature connected with Railroads Manufacturing and Commercial Business, and Banking operations generally, receive special attention.
STOCKS, BONDS, NOTES and PILLS OF EXCHANGE BOUGHT and SOLD on orders.

ALBERT H. NICOLAY, AUCTIONEER,

AND

STOCK BROKER,

No. 52 WILLIAM STREET.

Near Wall, NEW YORK.

Sales of Stocks and Bonds, also Real Estate, etc., etc.

H MEIGS, Jr. & SMITH, BANKERS and BROKERS,

39 WILLIAM STREET.

(FIRST BUILDING BELOW WALL STREET.)

STOCKS and BONDS Bought and Sold on Commission.

MERCANTILE PAPER and LOANS Negotiated.

INTEREST ALLOWED ON DEPOSITS.

HENRY MEIGS, JR. WM. ALEX. SMITH.

New York, May 11, 1858.

AMASA A. McLEAN & CO., NEGOTIATORS and BANKERS,

No. 49 PINE STREET,

NEW YORK.

A. H. DYETT, STOCK AND BOND BROKER

No. 43 EXCHANGE PLACE,

NEW YORK.

THOMAS GEORGE WALKER. DAVID TWEEDIE.

WALKER & TWEEDIE, 42 PINE STREET, NEW YORK.

Business Paper and Bills of Exchange negotiated.

BONDS, STOCKS and other Securities bought and sold.

KIRK & CHEEVER, STOCK AND NOTE BROKERS,

No. 57 WEST THIRD ST.,

CINCINNATI, OHIO.

DUNCAN, SHERMAN & CO., BANKERS, Corner PINE and NASSAU Sts., NEW YORK,

CIRCULAR NOTES AND LETTERS OF CREDIT, FOR TRAVELERS,

AVAILABLE IN ALL THE PRINCIPAL CITIES OF THE WORLD.
ALSO, MERCANTILE CREDITS,
For use in **EUROPE, CHINA, etc.**

SIMEON DRAPER, Auctioneer.

By SIMEON DRAPER, OFFICE, No. 36 PINE ST., NEW YORK. REGULAR AUCTION SALES

AT 36 PINE ST., EVERY DAY.

STOCKS and BONDS bought and sold at private sale
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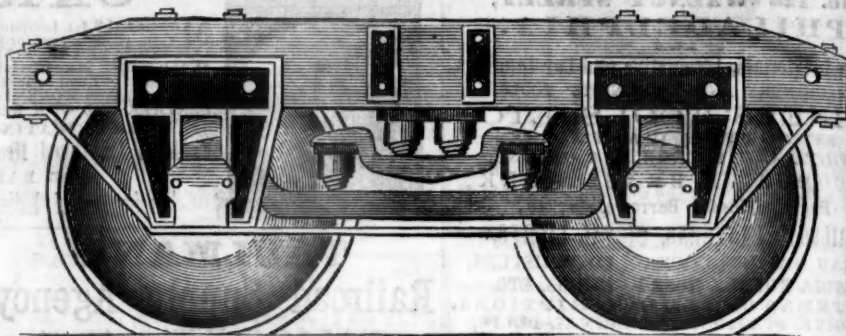
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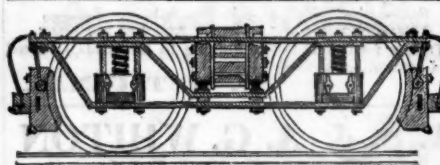
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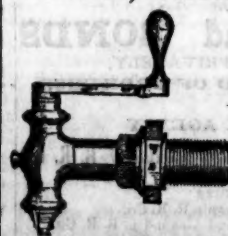
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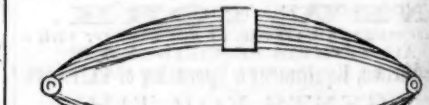
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